



**MISSION SPRINGS WATER DISTRICT  
STANDARD DRAWINGS**

**SEPTEMBER 2012**



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### SEWER PLAN VIEW

SEWER MAIN	—————	0.65mm
MAN HOLES	—————	0.45mm
LATERALS, TEXT	—————	0.30mm
OTHER UTILITIES	—————	0.20mm

### SEWER PROFILE VIEW

SEWER MAIN	—————	0.65mm
MAN HOLES	—————	0.45mm
INTERSECTING SEWER LINES, TEXT	—————	0.30mm
OTHER UTILITIES	—————	0.20mm

### WATER PLAN VIEW

WATER MAIN	—————	0.65mm
VALVES, FIRE HYDRANTS	—————	0.45mm
WATER SERVICES, TEXT	—————	0.30mm
OTHER UTILITIES	—————	0.20mm

### WATER PROFILE VIEW

WATER MAIN	—————	0.65mm
FIRE HYDRANTS, TEXT	—————	0.30mm
OTHER UTILITIES	—————	0.20mm



TYPICAL LINE TYPES

Approved: \_\_\_\_\_

Arden Wallum  
General Manager

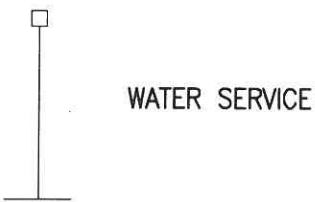
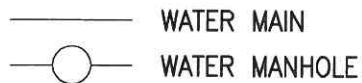
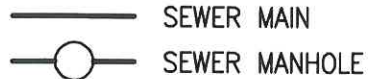
Drawn: Heitec Inc. Date: 01-14-08

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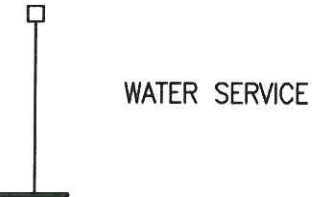
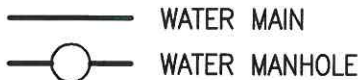
D-01



### SEWER PLAN VIEW



### WATER PLAN VIEW



### SEWER PROFILE VIEW



### WATER PROFILE VIEW



### TYPICAL LEGEND

Approved:

Arden Wallum  
General Manager

Drawn: Heitec Inc. Date: 01/14/08

DRAWING No.

D-02



CURVE DATA TABLE				
C#	DELTA	RADIUS	LENGTH	TANGENT
C1	-	-	-	-
C2	-	-	-	-
C3	-	-	-	-
C4	-	-	-	-
C5	-	-	-	-
C6	-	-	-	-
C7	-	-	-	-

MANHOLE / CLEANOUT LEGEND								
NO.	STATION	RIM/C.O. ELEV.(FT)	INV. ELEV. (IN)	DIR.	INV. ELEV. (OUT)	DIR.	SHEET #	DEPTH (FT)
M.H. 1	-	-	-	-	-	-	-	-
M.H. 2								
M.H. 3								
M.H. 4								
M.H. 5								

QUANTITIES & UNITS ON  
TITLE SHEET ONLY

CONSTRUCTION NOTES & QUANTITY ESTIMATE			
NO.	ITEM	QUANTITY	UNIT
①	-	-	-
②	-	-	-
③	-	-	-
④	-	-	-
⑤	-	-	-
⑥	-	-	-
⑦	-	-	-
⑧	-	-	-
⑨	-	-	-
⑩	-	-	-
⑪	-	-	-
⑫	-	-	-
⑬	-	-	-
⑭	-	-	-

SHOW ONLY NOTES  
PERTAINING TO SHEET



CURVE DATA TABLE,  
MANHOLE / CLEANOUT LEGEND,  
AND CONSTRUCTION NOTES &  
QUANTITY ESTIMATE

Approved:


Arden Wallum  
General Manager

Drawn: Heitec Inc. Date: 01/14/08

DRAWING No.

D-03

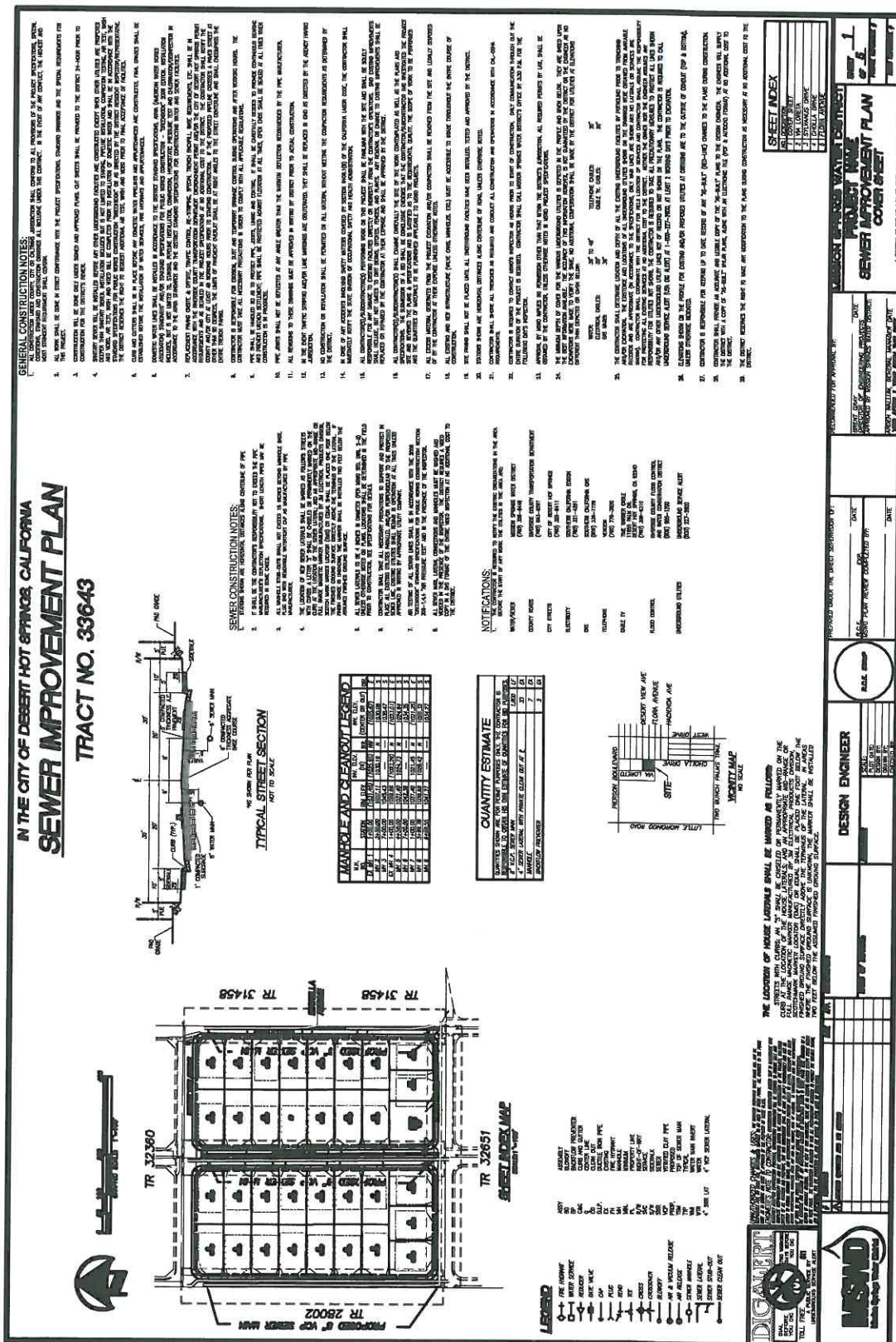


Approved:   
Arden Wallum  
General Manager

Drawn: Heitec Inc. Date: 8/29/12

DRAWING No.  
D-04

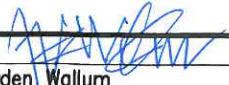


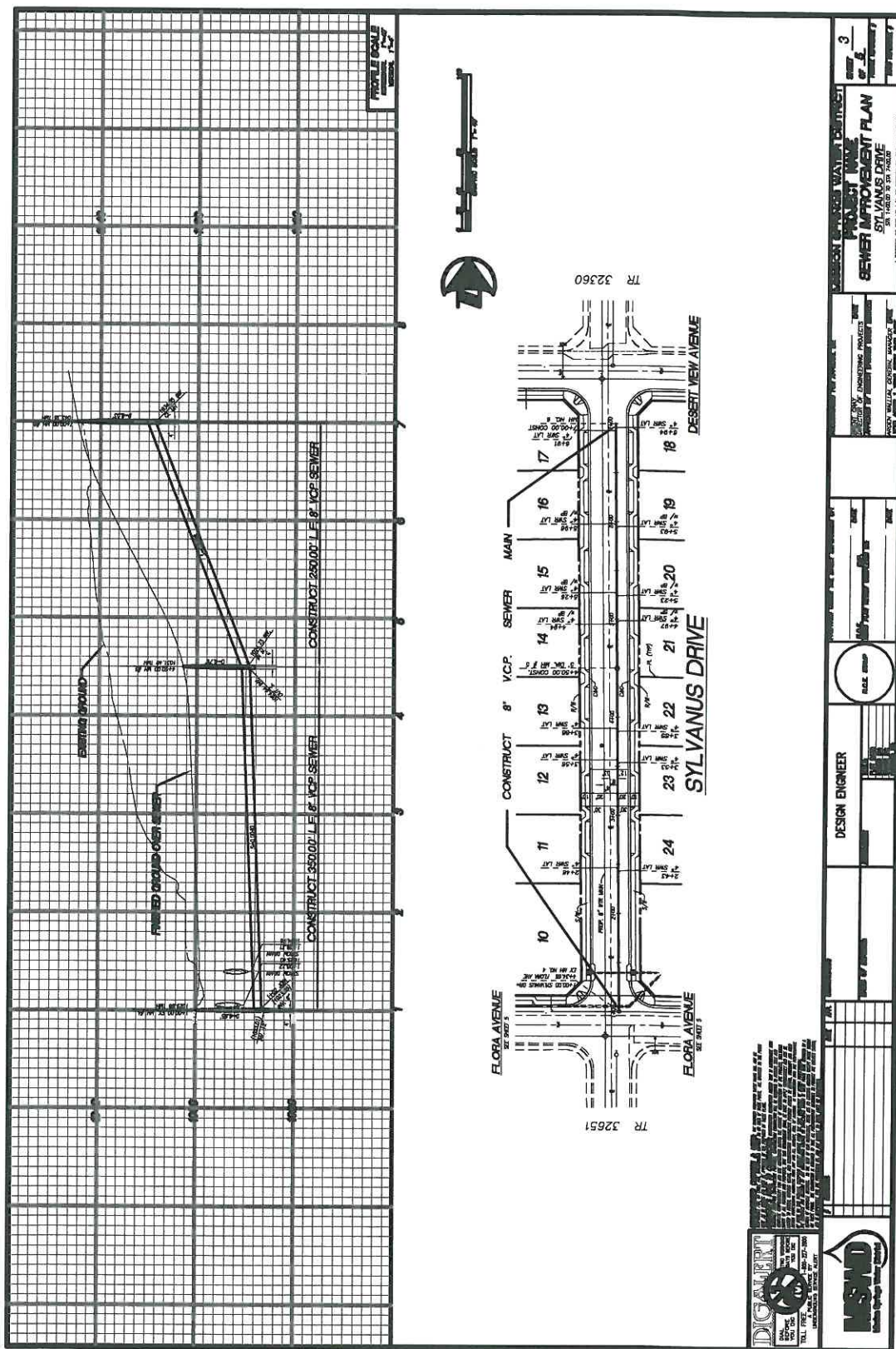






# TYPICAL SEWER PLAN AND PROFILE

Approved:   
 Arden Wallum  
 General Manager  
 Drawn: Heitec Inc. Date: 8/31/12  
 DRAWING No.  
 D-06

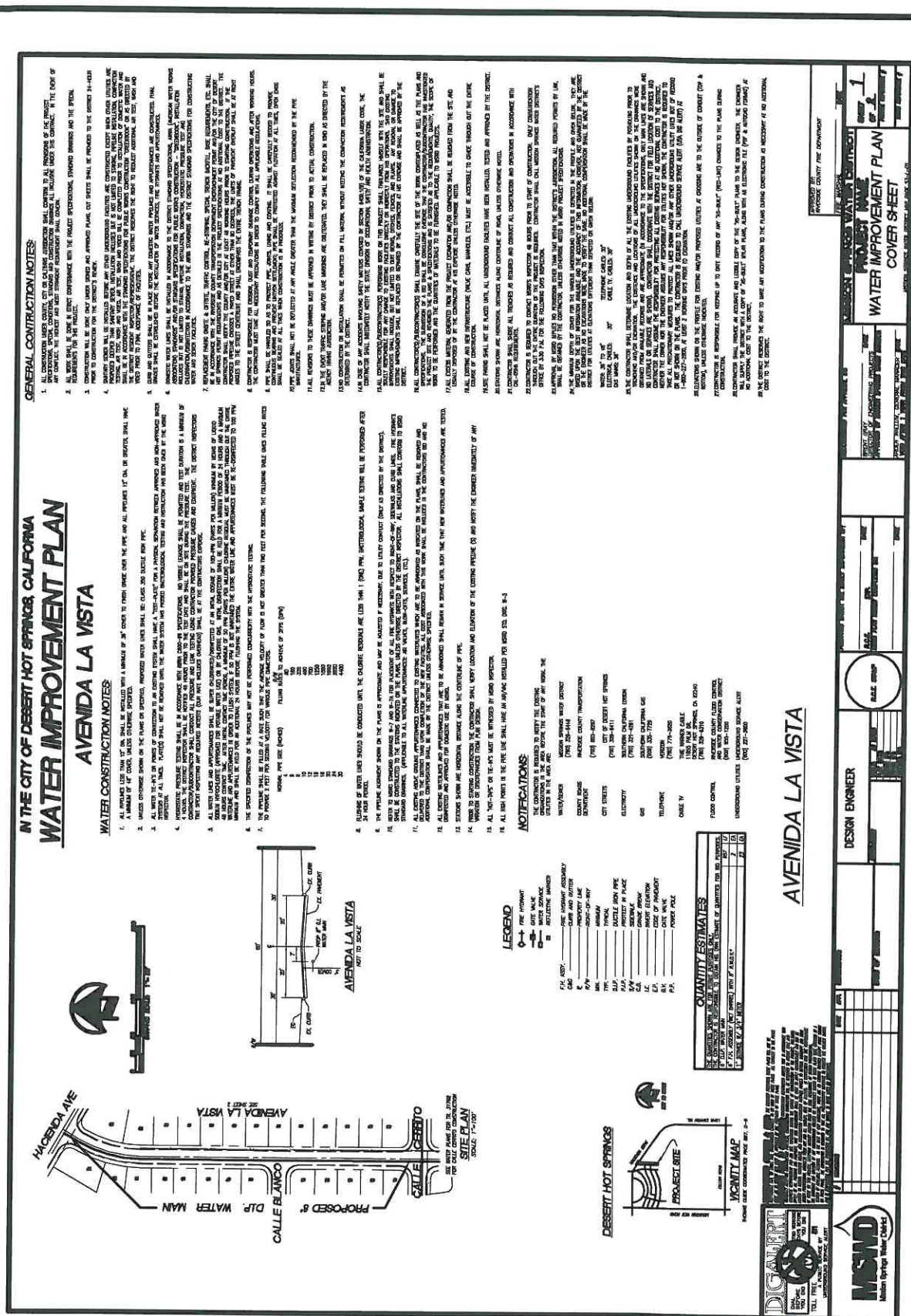


**MSWD**  
 Mission Springs Water District  
 1000 N. 10th St., Suite 100  
 Phoenix, AZ 85004  
 Phone: 602-998-2200  
 Fax: 602-998-2201  
 Website: www.mission-springs-az.gov

**DESIGN ENGINEER**  
 [Signature]  
 [Name]  
 [Title]

**PROJECT NAME**  
 SEWER IMPROVEMENT PLAN  
**PROJECT LOCATION**  
 SYLVANUS DRIVE  
**PROJECT NUMBER**  
 3




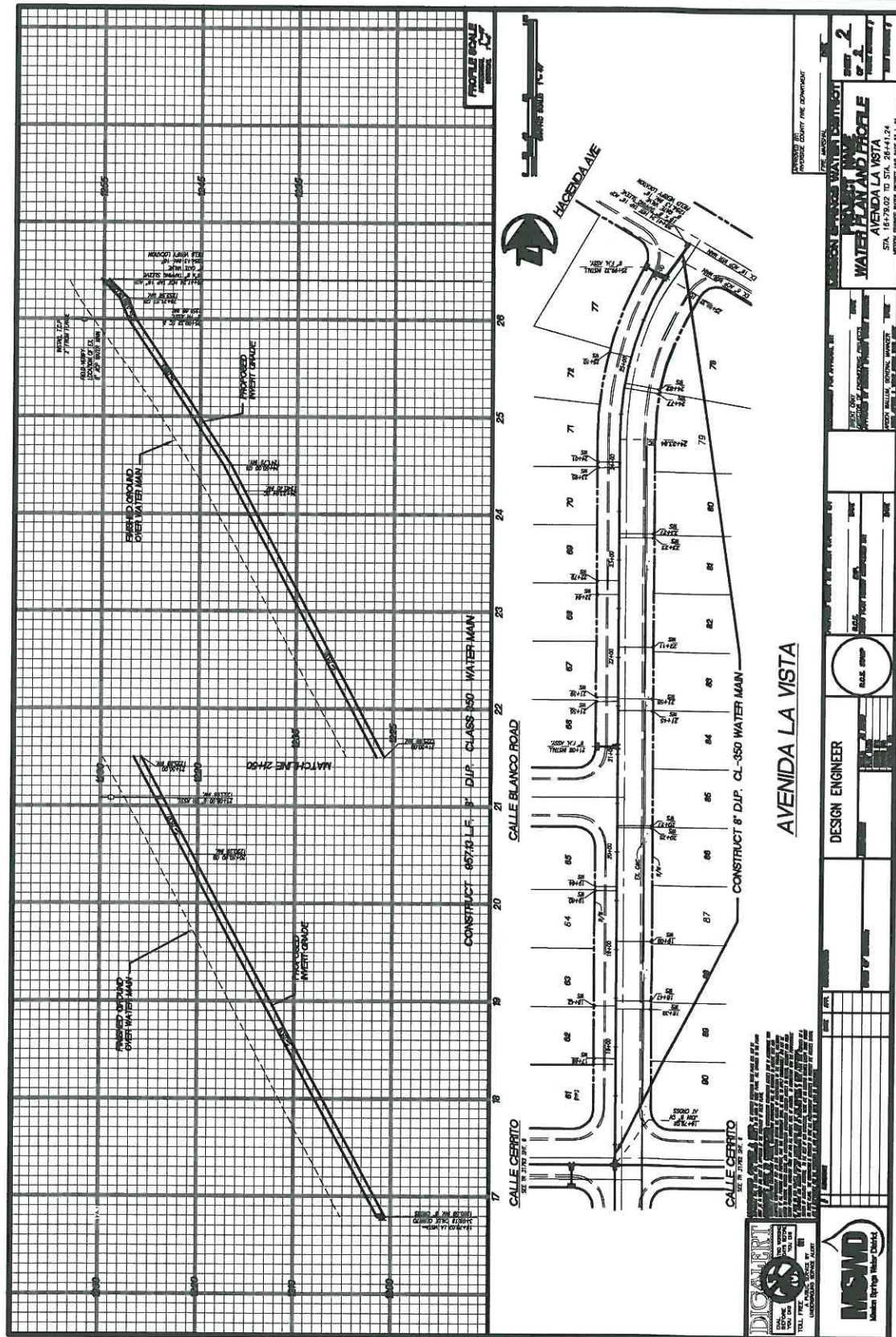






# TYPICAL WATER PLAN AND PROFILE

Approved:   
 Arden Wallum  
 General Manager  
 Drawn: Heitec Inc. Date: 8/31/12  
 DRAWING No.  
 D-08





## **FIRE FLOW CERTIFICATION**

I HEREBY CERTIFY THAT THE FIRE WATER SUPPLY SYSTEM SHOWN HEREIN WILL PROVIDE A MINIMUM FLOW OF \_\_\_\_\_ GPM FOR A \_\_\_\_\_ HOUR DURATION WITH A MINIMUM RESIDUAL PRESSURE OF 20 PSI IN ACCORDANCE WITH THE FIRE DEPARTMENT CONDITIONS FOR THIS PROJECT.

\_\_\_\_\_  
ENGINEER'S NAME      RCE      EXP.      DATE

THE ABOVE CERTIFICATION SHALL BE PLACED ON ALL WATER IMPROVEMENT PLANS CONTAINING OR SERVING FIRE PROTECTION DEVICES. THE ENGINEER SHALL COMPLETE THE INFORMATION IN ACCORDANCE WITH THE FIRE MARSHAL REQUIREMENTS FOR THE PROJECT AND SHALL SIGN AND DATE THE CERTIFICATE ON THE MYLAR SUBMITTAL.

FOR PROJECTS PROVIDING FIRE PROTECTION TO BUILDINGS THROUGH ONE OR MORE DOUBLE CHECK DETECTOR ASSEMBLIES, THE FIRE SPRINKLER DEMAND IN G.P.M. AND THE REQUIRED PRESSURE AT THE BUILDING RISER SHALL BE OBTAINED FROM THE FIRE SPRINKLER DESIGN ENGINEER AND LISTED ON THE PLANS AS SHOWN BELOW.

### **FIRE SPRINKLER DEMAND AT RISER**

BUILDING NO. \_\_\_\_\_ = \_\_\_\_\_ G.P.M. AT \_\_\_\_\_ P.S.I. MIN. AT FIRE RISER  
BUILDING NO. \_\_\_\_\_ = \_\_\_\_\_ G.P.M. AT \_\_\_\_\_ P.S.I. MIN. AT FIRE RISER

THE ABOVE INFORMATION IS REQUIRED TO JUSTIFY THE SIZE FOR ANY DOUBLE CHECK DETECTOR ASSEMBLY, AND SHALL BE USED IN CALCULATION OF THE REQUIRED FIRE FLOW COMPUTATIONS.



FIRE FLOW CERTIFICATIONS

Approved: \_\_\_\_\_

Arden Wallum  
General Manager

Drawn: Heitec Inc.      Date: 04-24-12

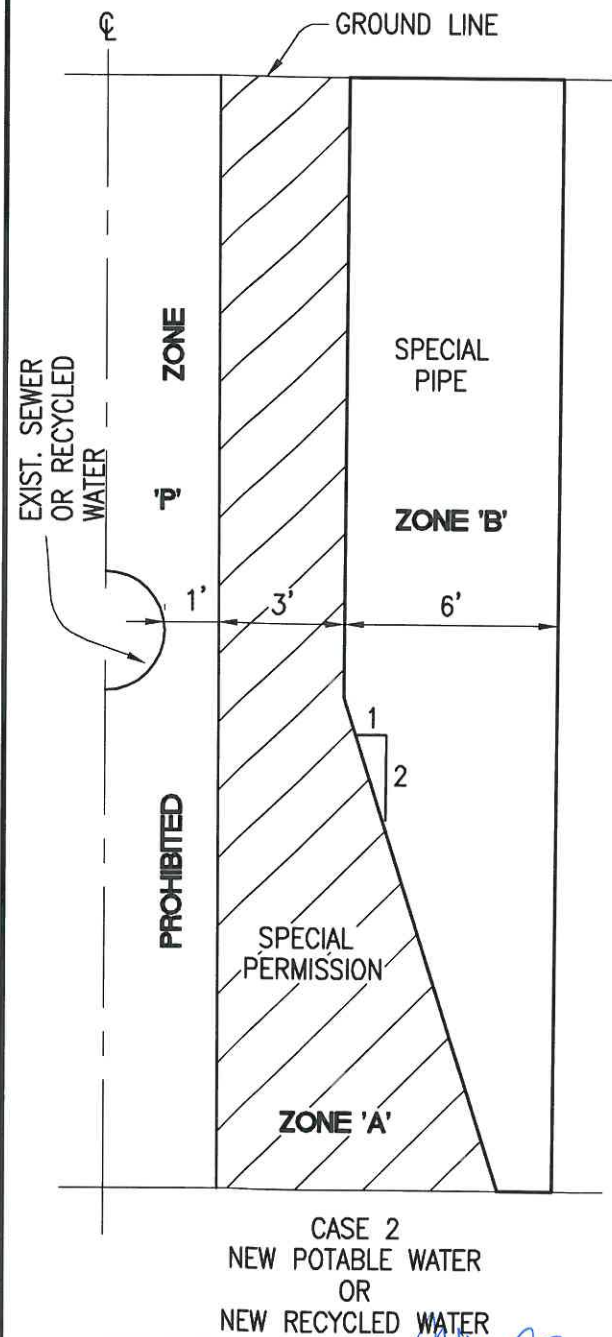
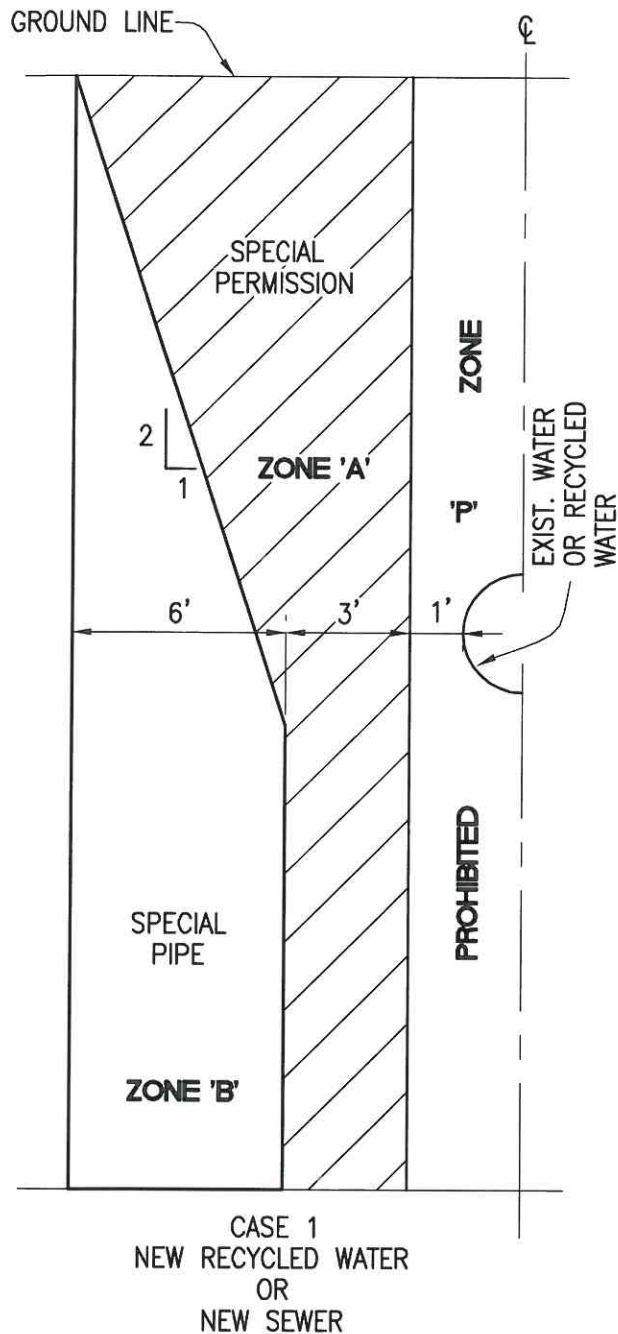
DRAWING No.

D-09




NOTES:

1. ZONES IDENTICAL ON EITHER SIDE OF CENTERLINE AS SHOWN BELOW.
2. REQUIREMENTS OF THE CALIFORNIA DEPARTMENT OF PUBLIC HEALTH.
3. SEE G-03 FOR NOTES ON WATER, RECYCLED WATER AND SEWER MAIN PARALLEL AND PERPENDICULAR SEPARATIONS.
4. REFER TO THE MSWD STANDARD DESIGN GUIDELINES FOR NEW PIPE SEPARATION REQUIREMENTS. MINIMUM SEPARATION BETWEEN WATER, RECYCLED WATER, AND SEWER MAINS SHALL BE 10' FROM PIPE O.D.



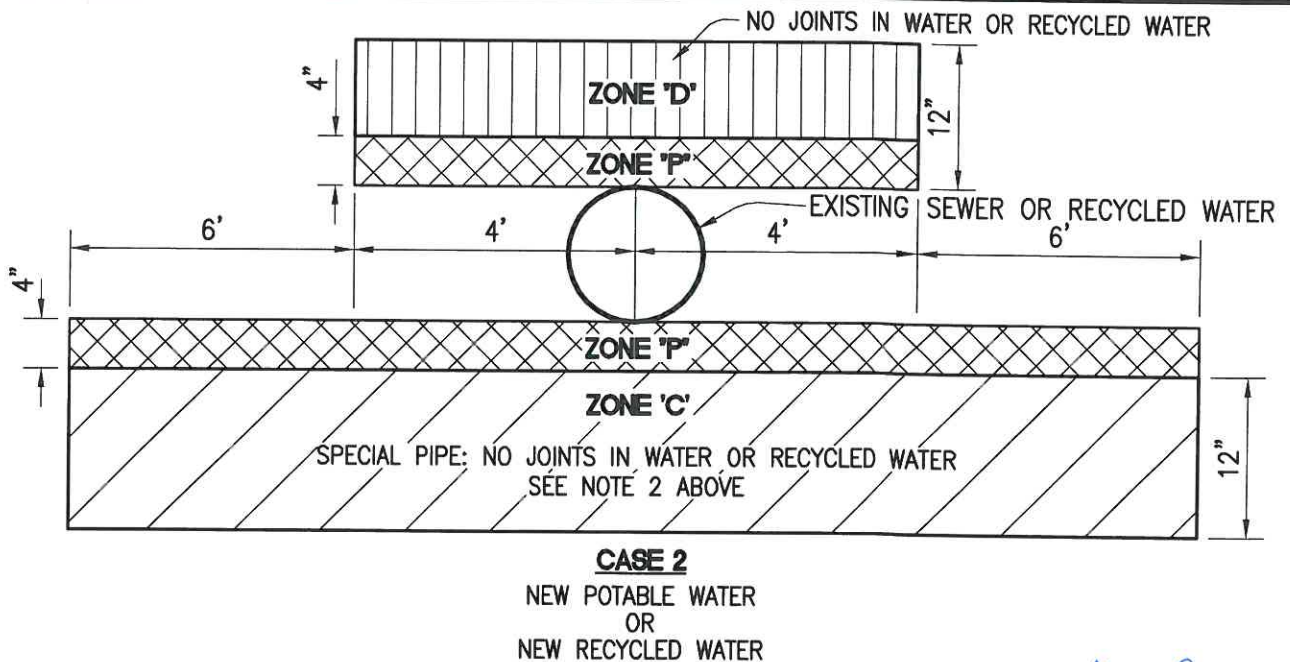
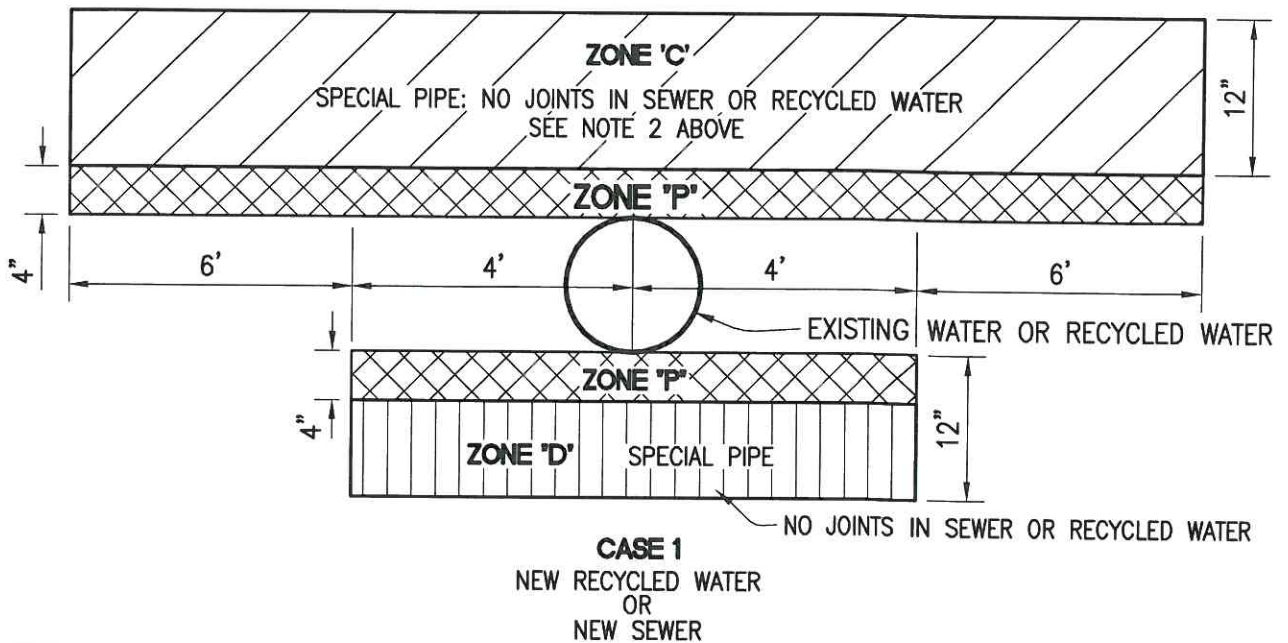
PARALLEL SEPARATIONS  
NEW AND EXISTING WATER, SEWER,  
OR RECYCLED WATER

Approved:   
Arden Wallum  
General Manager  
Drawn: Heitec Inc. Date: 4/24/12  
DRAWING No.  
G-01



**NOTES:**

1. REQUIREMENTS OF THE CALIFORNIA DEPARTMENT OF PUBLIC HEALTH.
2. SEE G-03 FOR NOTES ON WATER, RECYCLED WATER AND SEWER MAIN PARALLEL AND PERPENDICULAR SEPARATIONS.
3. MAINS SHALL CROSS OTHER UTILITIES AT A PERPENDICULAR ANGLE, UNLESS OTHERWISE APPROVED. IN ANY CASE, UTILITIES CROSSING AT A SKEW ANGLE OF SEVENTY-FIVE DEGREES (75°) OR LESS SHALL BE AVOIDED.
4. REFER TO THE MSWD STANDARD DESIGN GUIDELINES FOR NEW PIPE SEPARATION REQUIREMENTS. MINIMUM SEPARATION BETWEEN WATER, RECYCLED WATER, AND SEWER MAINS SHALL BE 10' FROM PIPE O.D.



PERPENDICULAR SEPARATIONS  
NEW AND EXISTING WATER, SEWER,  
OR RECYCLED WATER

Approved:

Arden Wallum  
General Manager

Drawn: Heitec Inc. Date: 04/24/12

DRAWING No.

G-02



## CONSTRUCTION REQUIREMENTS FOR WATER, RECYCLED WATER AND SEWER MAINS

### CASE 1: NEW RECYCLED WATER OR SEWER MAINS

#### ZONE

- A. SPECIAL PERMISSION REQUIRED. DO NOT LOCATE ANY PARALLEL SEWER OR RECYCLED WATER MAINS IN THIS AREA WITHOUT SPECIFIC DISTRICT AND CALIFORNIA DEPARTMENT OF PUBLIC HEALTH APPROVAL.
- B. CLASS 350 DUCTILE IRON PIPE WITH PROTECTO 401 EPOXY LINING AND PUSH-ON TYPE RUBBER RING JOINTS FOR SEWER MAINS. C-900, CL200, C-905, OR PR235 PURPLE PVC PIPE WITH PUSH ON TYPE RUBBER RING JOINTS FOR RECYCLED WATER MAINS.
- C. A 20' SECTION OF CLASS 350 DUCTILE IRON PIPE WITH PROTECTO 401 EPOXY LINING CENTERED AT THE MAIN BEING CROSSED, OR SEWER PIPE INSTALLED IN A CASING (FOR SEWER MAINS).  
A 20' SECTION OF C-900, CL200 OR C-905, PR235 PURPLE PVC PIPE CENTERED AT THE MAIN BEING CROSSED, OR RECYCLED WATER PIPE INSTALLED IN A CASING (FOR RECYCLED WATER MAINS).
- D. CLASS 350 DUCTILE IRON PIPE WITH PROTECTO 401 EPOXY LINING WITH NO JOINTS LOCATED WITHIN 4' EITHER SIDE OF THE MAIN BEING CROSSED, OR SEWER PIPE INSTALLED IN A CASING (FOR SEWER MAINS).  
C-900, CL200, C-905, OR PR235 PURPLE PVC PIPE WITH NO JOINTS LOCATED WITHIN 4' EITHER SIDE OF THE MAIN BEING CROSSED, OR RECYCLED WATER PIPE INSTALLED IN A CASING (FOR RECYCLED WATER MAINS).
- P. PROHIBITED ZONE: NO SEWER OR RECYCLED WATER MAINS: SECTION 64630 (e)  
(2) CALIFORNIA ADMINISTRATIVE CODE, TITLE 22.

### CASE 2: NEW POTABLE WATER OR RECYCLED WATER MAINS

#### ZONE

- A. SPECIAL PERMISSION REQUIRED. DO NOT LOCATE ANY PARALLEL WATER OR RECYCLED WATER MAINS IN THIS AREA WITHOUT SPECIFIC DISTRICT AND CALIFORNIA DEPARTMENT OF PUBLIC HEALTH APPROVAL.
- B. CLASS 350 DUCTILE PIPE WITH PUSH-ON TYPE RUBBER RING JOINTS FOR WATER MAINS. C-900, CL200, C-905, OR PR235 PURPLE PVC PIPE WITH PUSH-ON TYPE RUBBER RING JOINTS FOR RECYCLED WATER MAINS.
- C. A 20' SECTION CLASS 350 DUCTILE IRON PIPE CENTERED AT THE MAIN BEING CROSSED, OR WATER PIPE INSTALLED IN A CASING (FOR WATER MAINS).  
A 20' SECTION OF C-900, CL200, C-905, OR PR235 PURPLE PVC PIPE CENTERED AT THE MAIN BEING CROSSED, OR RECYCLED WATER PIPE INSTALLED IN A CASING (FOR RECYCLED WATER MAINS).
- D. CLASS 350 DUCTILE IRON PIPE WITH NO JOINTS LOCATED WITHIN 4' EITHER SIDE OF THE MAIN BEING CROSSED, OR WATER PIPE INSTALLED IN A CASING (FOR WATER MAINS).  
C-900, CL200, C-905, OR PR235 PURPLE PVC PIPE WITH NO JOINTS LOCATED WITHIN 4' EITHER SIDE OF THE MAIN BEING CROSSED, OR RECYCLED WATER PIPE INSTALLED IN A CASING (FOR RECYCLED WATER MAINS).
- P. PROHIBITED ZONE: NO WATER OR RECYCLED WATER MAINS: SECTION 64630 (e)  
(2) CALIFORNIA ADMINISTRATIVE CODE, TITLE 22.

#### NOTE:

REFER TO THE MSWD STANDARD DESIGN GUIDELINES FOR NEW PIPE SEPARATION REQUIREMENTS. MINIMUM SEPARATION BETWEEN WATER, RECYCLED WATER, AND SEWER MAINS SHALL BE 10' FROM PIPE O.D..



### WATER, RECYCLED WATER AND SEWER MAIN PARALLEL AND PERPENDICULAR SEPARATION NOTES

Approved: \_\_\_\_\_

Arden Wallum  
General Manager

Drawn: Heitec Inc. Date: 01/22/08

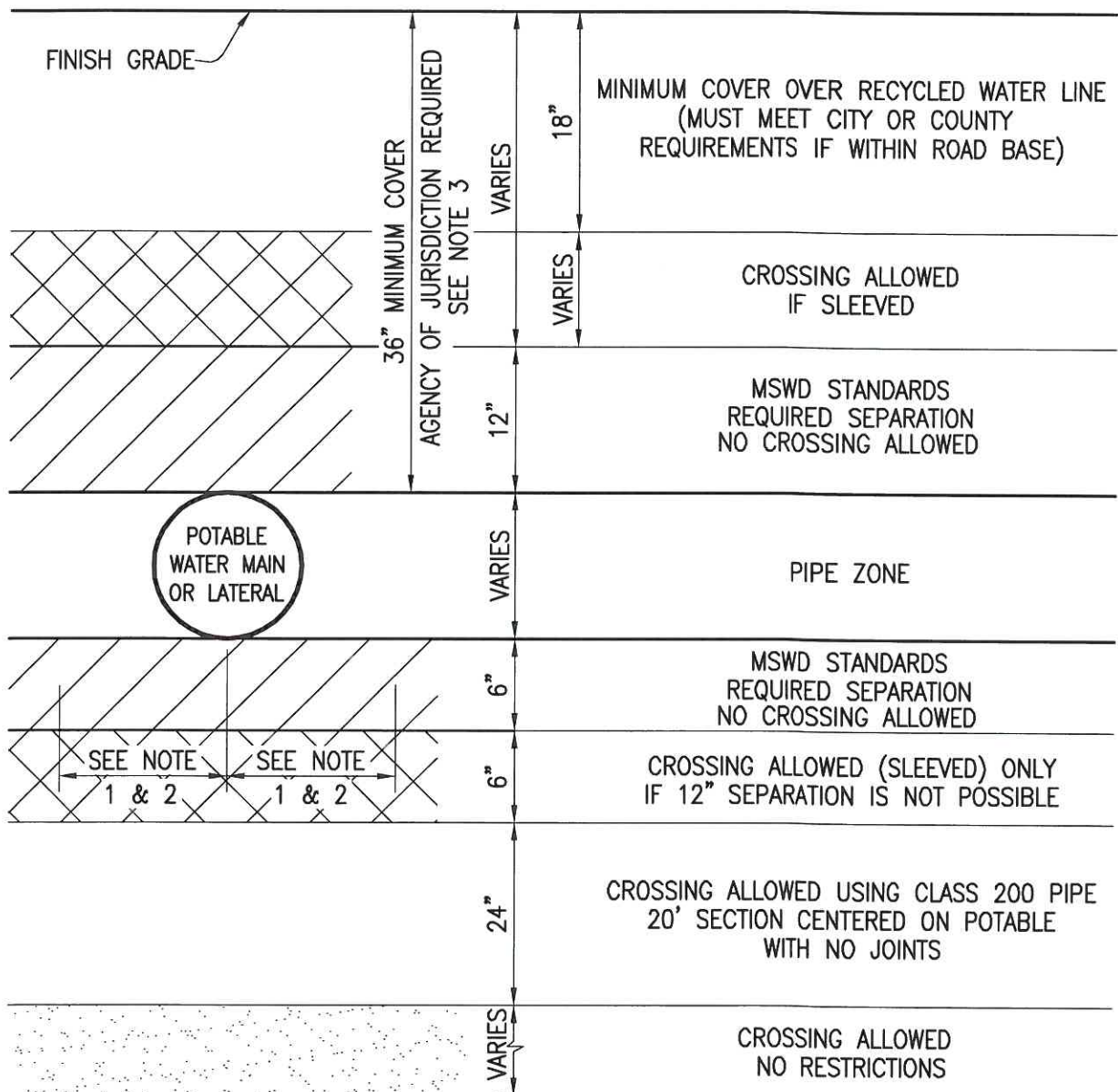
DRAWING No.

G-03



NOTES:

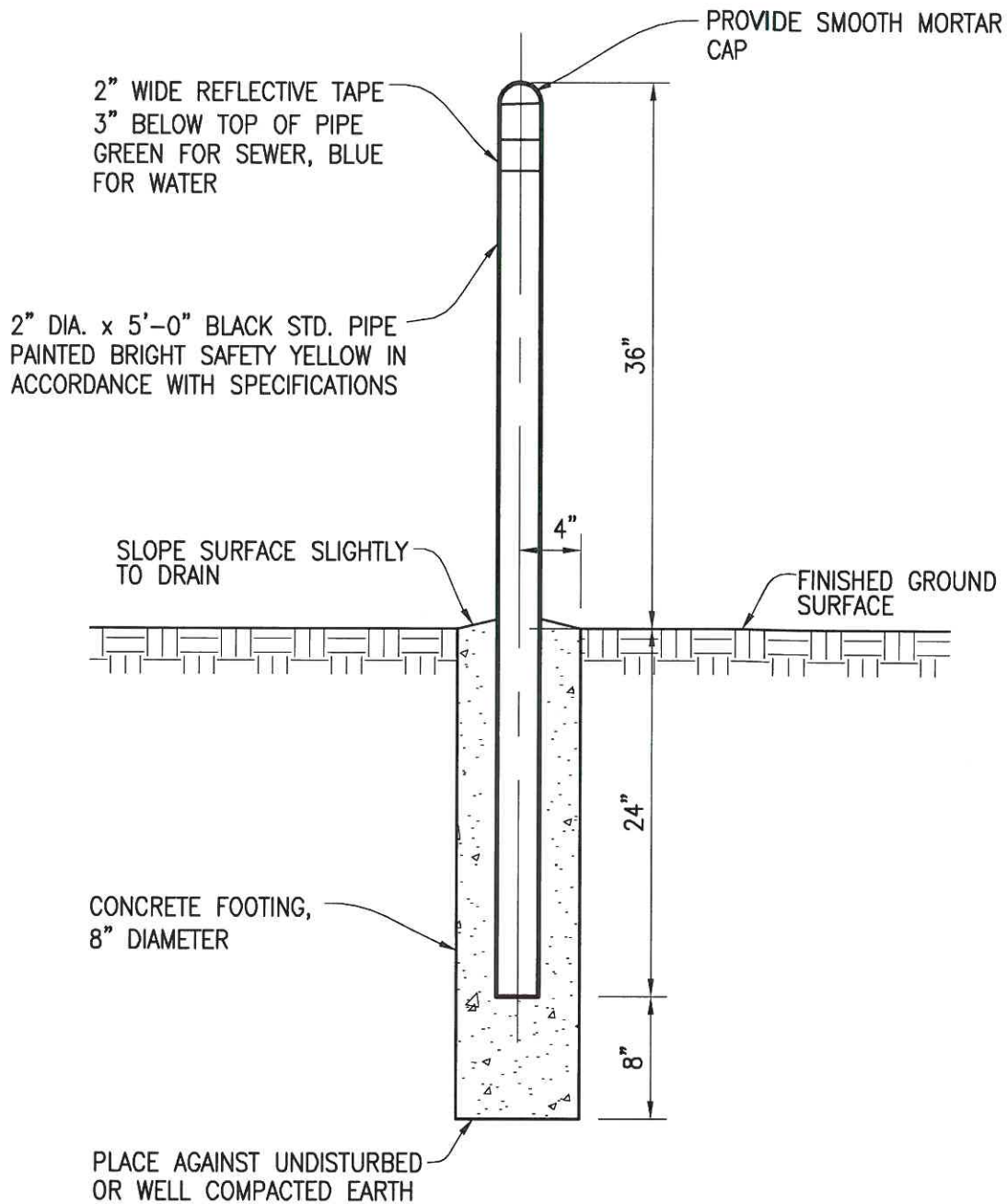
1. EXTEND SLEEVE 5' ON EITHER SIDE OF POTABLE WATER LATERALS 3" DIAMETER OR SMALLER.
2. EXTEND SLEEVE 10' ON EITHER SIDE OF POTABLE WATER LATERALS 4" DIAMETER OR LARGER (NO JOINTS IN SLEEVE OR PIPE).
3. IF POTABLE WATER LINE HAS LESS THAN 36" COVER, RECYCLED WATER LINE MUST CROSS BELOW POTABLE WATER.
4. REFER TO THE MSWD STANDARD DESIGN GUIDE FOR PIPE SEPARATION REQUIREMENTS.



POST METER CONSTANT PRESSURE  
RECYCLED WATER LINE 3"  
DIAMETER OR LESS CROSSING  
POTABLE WATER MAIN OR LATERAL  
WITHIN PUBLIC RIGHT OF WAY

Approved: *Arden Wallum*  
Arden Wallum  
General Manager  
Drawn: *Arden Wallum*  
Date: 4/24/12  
DRAWING No.  
G-04





NOTE:  
MARKERS TO BE INSTALLED AS  
DIRECTED IN THE FIELD BY THE  
DISTRICT TO INDICATE LOCATION OF  
VALVES.



# MARKER POST INSTALLATION

Approved:

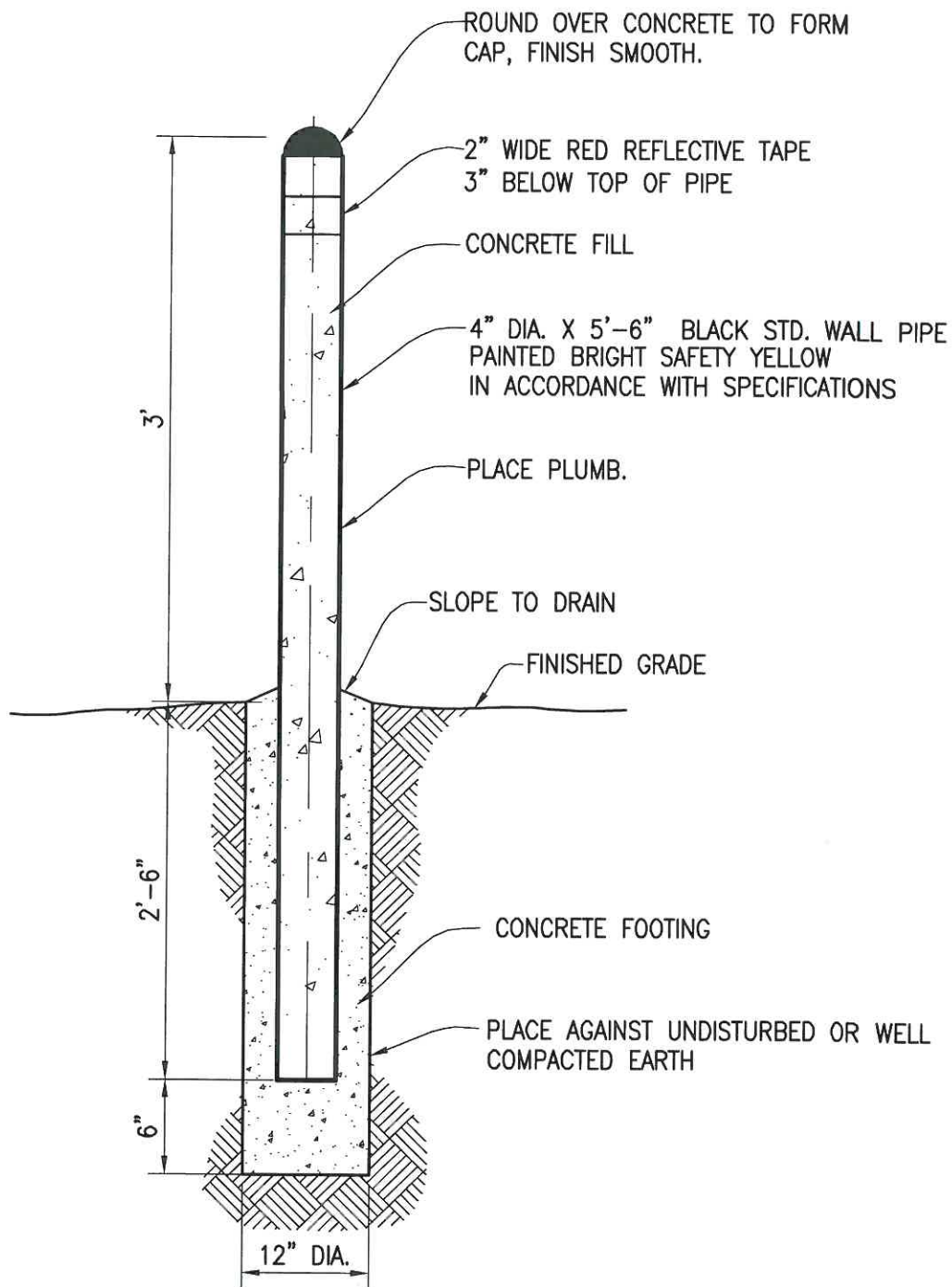
Arden Wallum  
General Manager

Drawn: Heitec Inc. Date: 01/21/08

DRAWING No.

G-05





NOTE:  
LOCATION SHALL BE AS SHOWN ON PLAN VIEW, OR AS DIRECTED IN THE  
FIELD BY THE DISTRICT



# GUARD POST INSTALLATION

Approved:

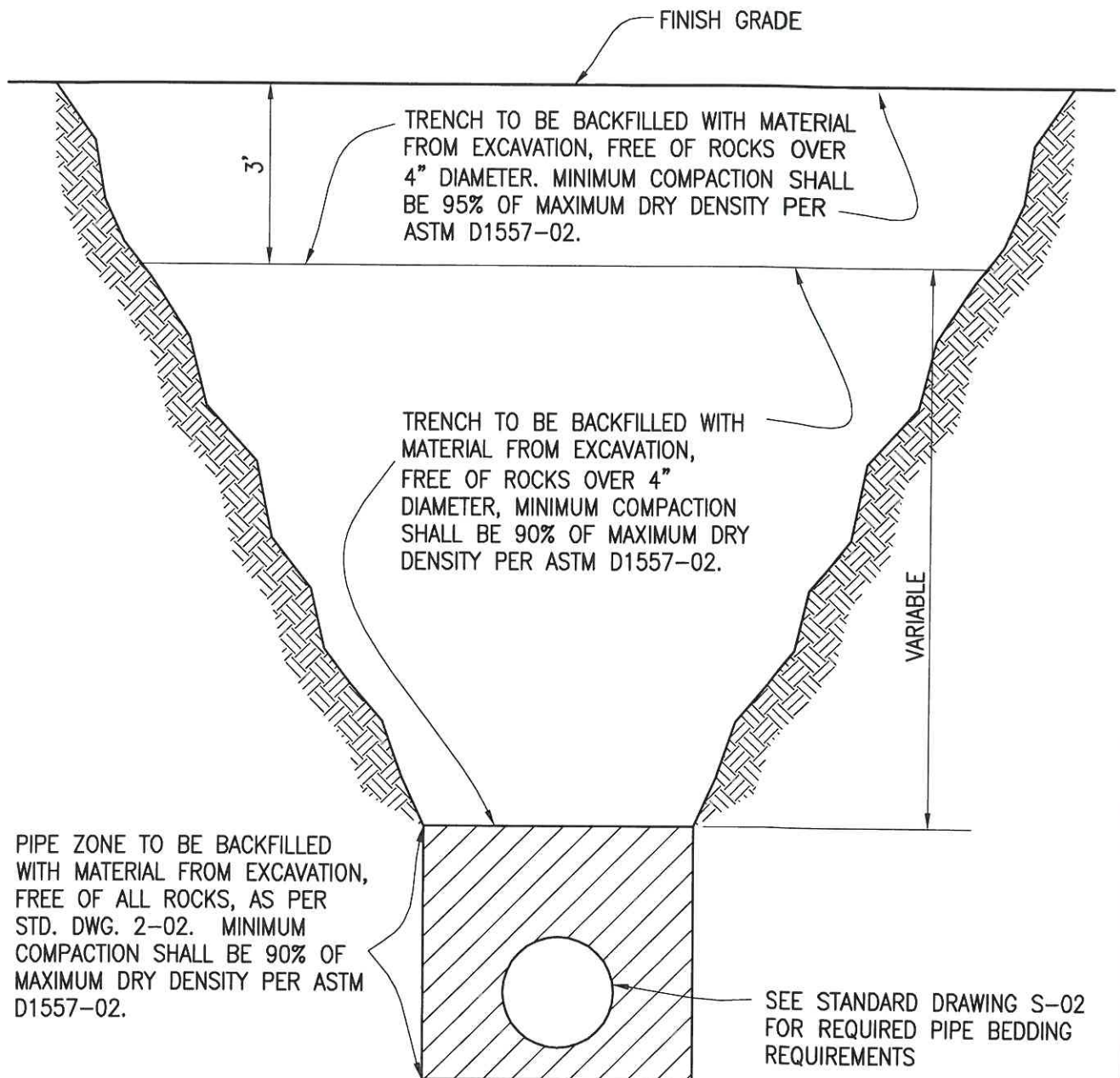
Arden Wallum  
General Manager

Drawn: Heitec Inc. Date: 01/21/08

DRAWING No.

G-06





NOTES:

1. ALL TRENCHING SHALL CONFORM TO CAL-OSHA SAFETY STANDARDS.
2. ALL TRENCH SHALL BE BACKFILLED DAILY AFTER APPROVED INSPECTION BY THE MSWD INSPECTOR UNLESS SPECIFICALLY APPROVED AND SAFELY BARRICADED.



TYPICAL SEWER TRENCH  
DETAIL

Approved:

Arden Wallum  
General Manager

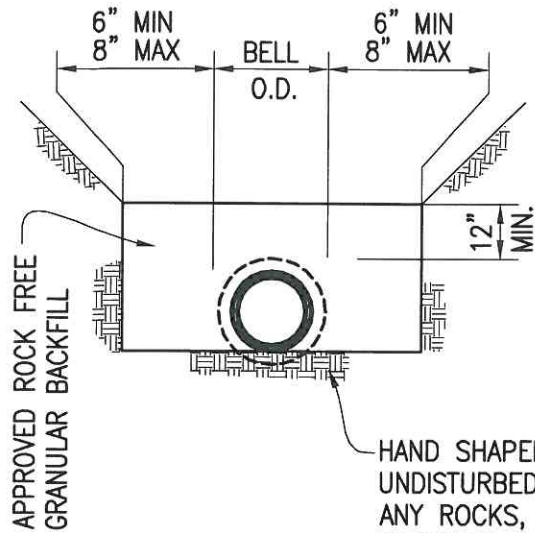
Drawn: Heitec Inc Date: 06/20/11

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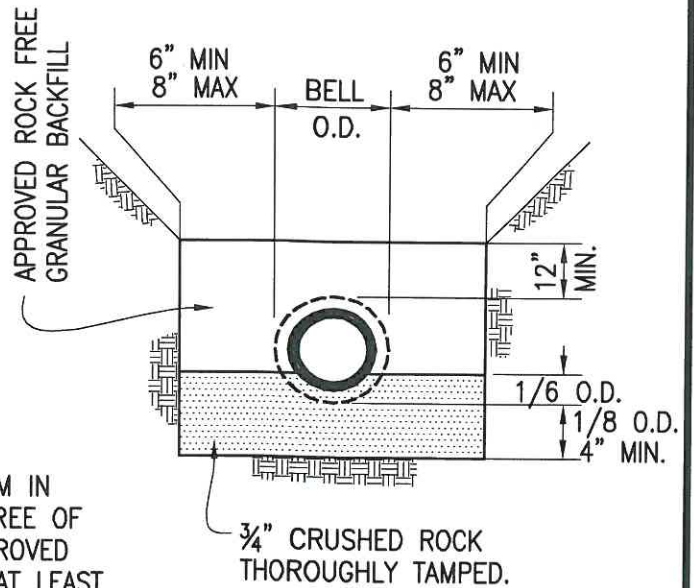
S-01



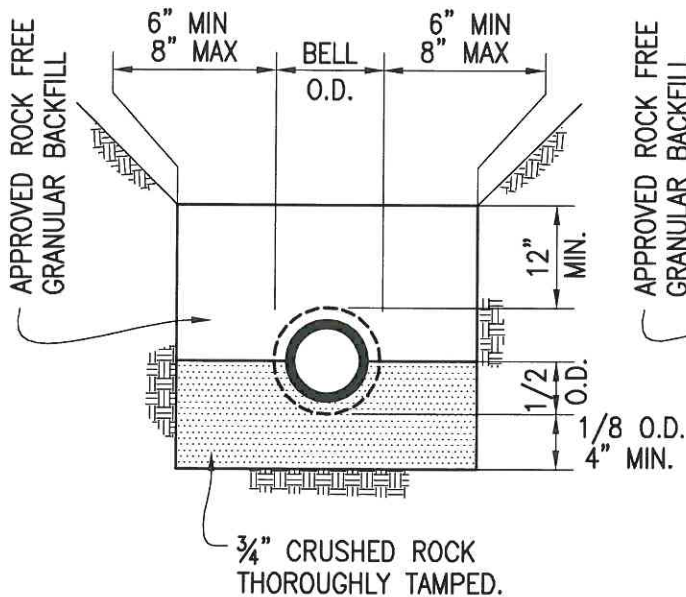
**NOTE:** ALL DIMENSIONS REFERRING TO O.D. SHALL BE BASED ON THE MAXIMUM BELL OR COUPLING DIAMETER



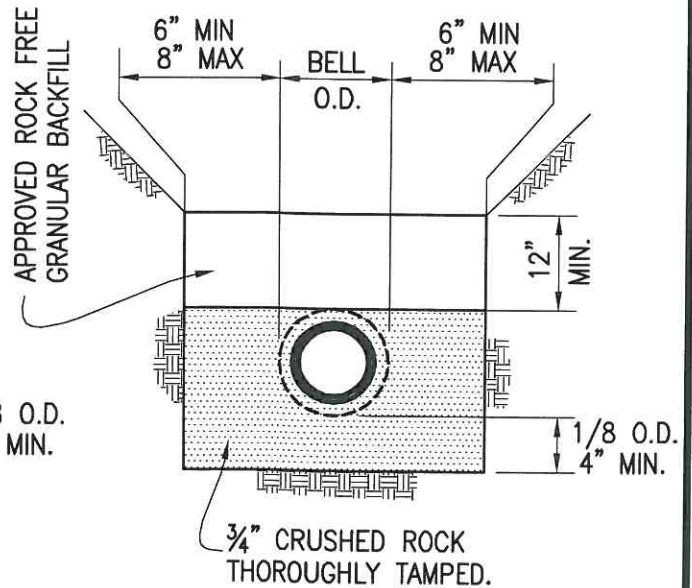
**CLASS D  
NATIVE BEDDING**  
(LOAD FACTOR = 1.1)



**CLASS C  
SPECIAL BEDDING**  
(LOAD FACTOR = 1.5)



**CLASS B  
SPECIAL BEDDING**  
(LOAD FACTOR = 1.9)



**CRUSHED STONE  
ENCASEMENT**  
(LOAD FACTOR = 2.2)



SEWER  
PIPE BEDDING

Approved:

Arden Wallum  
General Manager

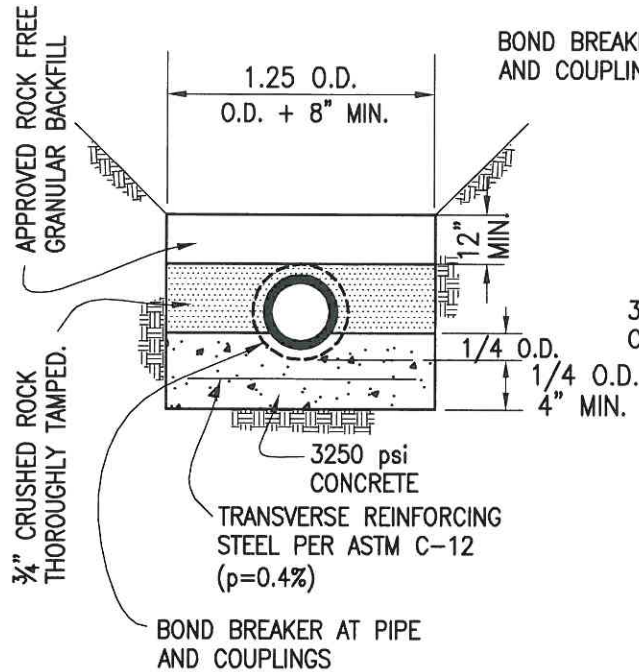
Drawn: Heitec Inc. Date: 01/21/08

DRAWING No.

S-02A

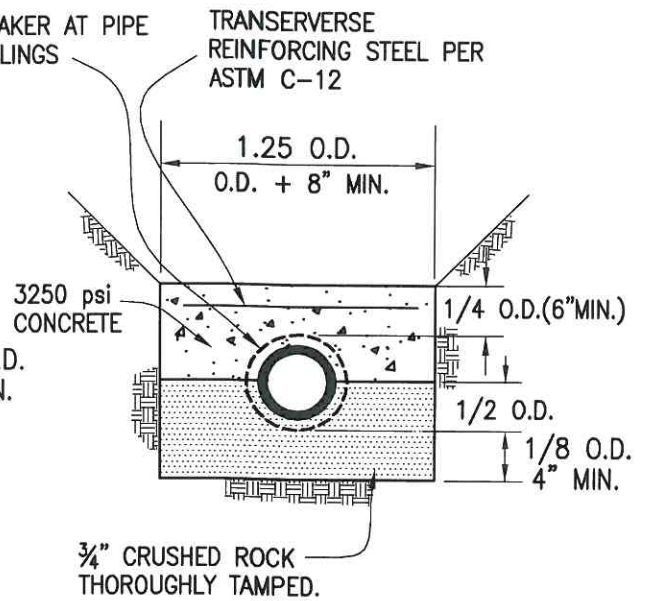


NOTE: ALL DIMENSIONS REFERRING TO O.D. SHALL BE BASED ON THE MAXIMUM BELL OR COUPLING DIAMETER



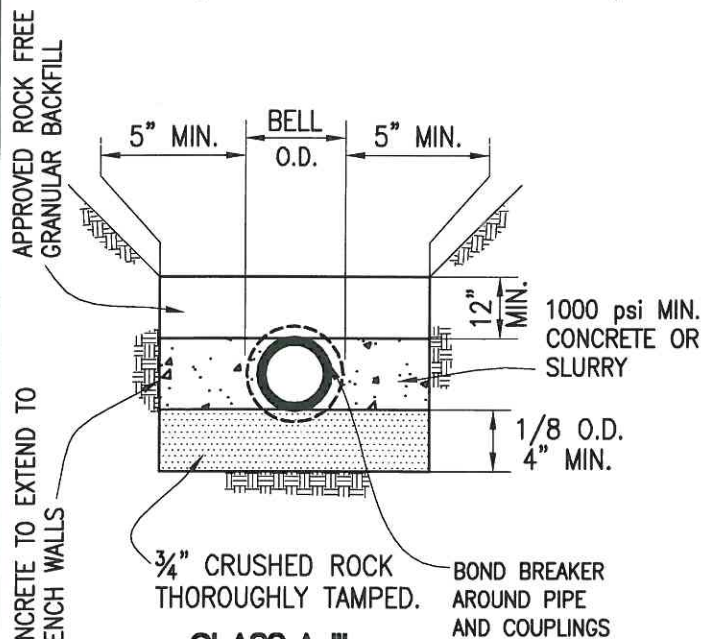
**CLASS A-I  
CONCRETE CRADLE**

(NON-REINFORCED LOAD FACTOR = 2.8)  
(REINFORCED LOAD FACTOR = 3.4)



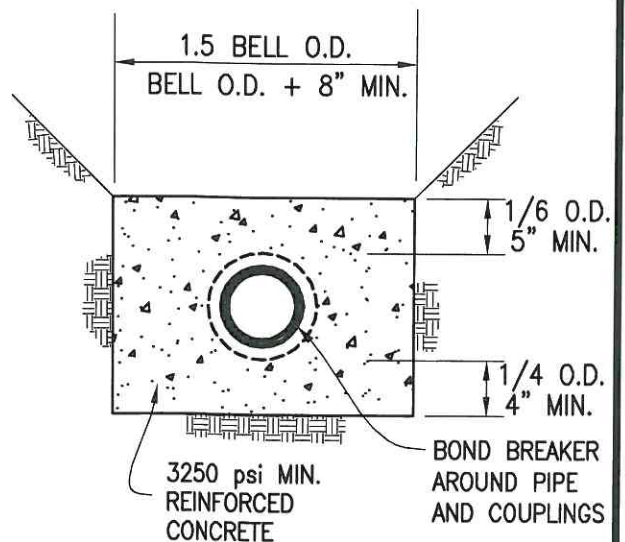
**CLASS A-II  
CONCRETE ARCH**

(REINFORCED  $p=0.4\%$  LOAD FACTOR = 3.4)  
(REINFORCED  $p=1.0\%$  LOAD FACTOR = 4.5)



**CLASS A-III  
SIDE CRADLING**

(LOAD FACTOR = 2.7)  
NOT RECOMMENDED FOR USE  
IN EXPANSIVE SOILS



**CLASS A-IV  
CONCRETE ENCASEMENT**

(LOAD FACTOR OVER 4.5)  
SHALL BE DESIGNED BY A  
REGISTERED ENGINEER



CONCRETE SEWER  
PIPE BEDDING AND  
ENCASEMENT

Approved:   
Arden Wallum  
General Manager  
Drawn: Heitec Inc. Date: 01/21/08  
DRAWING No.  
S-02B

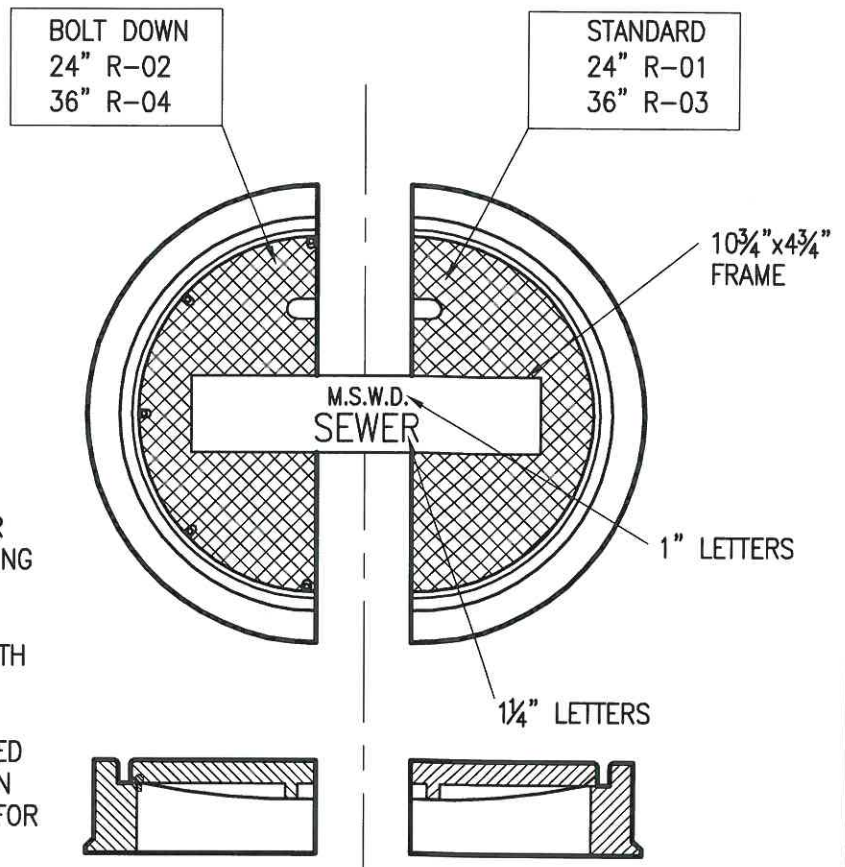


NOTES:

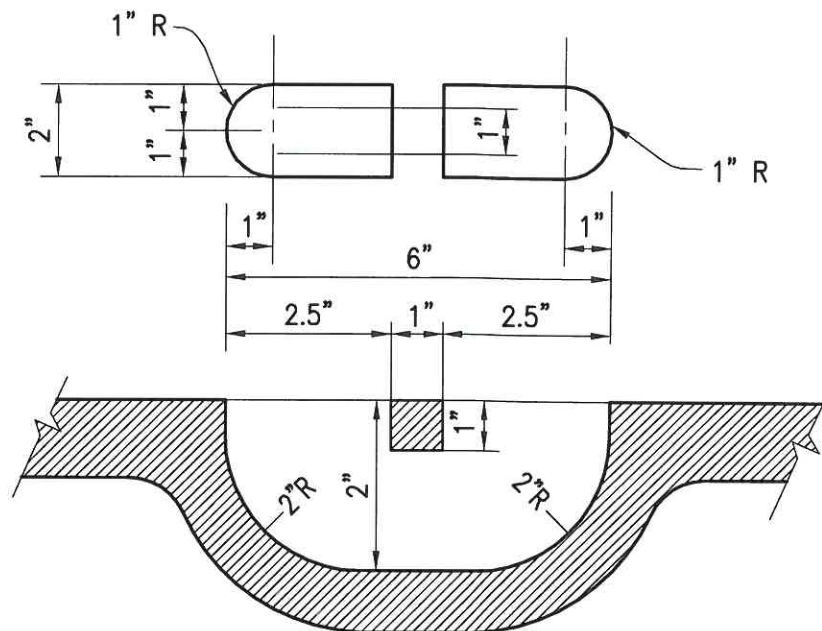
1. FRAME AND COVER SHALL BE PER APPROVED MATERIALS LIST WITH LIFTING DEVICE CAST COVER AS PER DETAIL SHOWN BELOW.  
COVER SHALL BE DIAMOND TREAD WITH NAME LETTERED AS SHOWN.

2. BOLT-DOWN COVERS ARE REQUIRED IN SOME LOCATIONS AS SPECIFIED ON THE PLANS. GENERALLY REQUIRED FOR ALL EASEMENT LOCATIONS.

3. FOR 60" MANHOLE USE 36" DIA. FRAME AND COVER.



FRAME AND COVER DETAIL



LIFTING RECEPTACLE DETAIL



MANHOLE FRAME AND COVER

Approved:

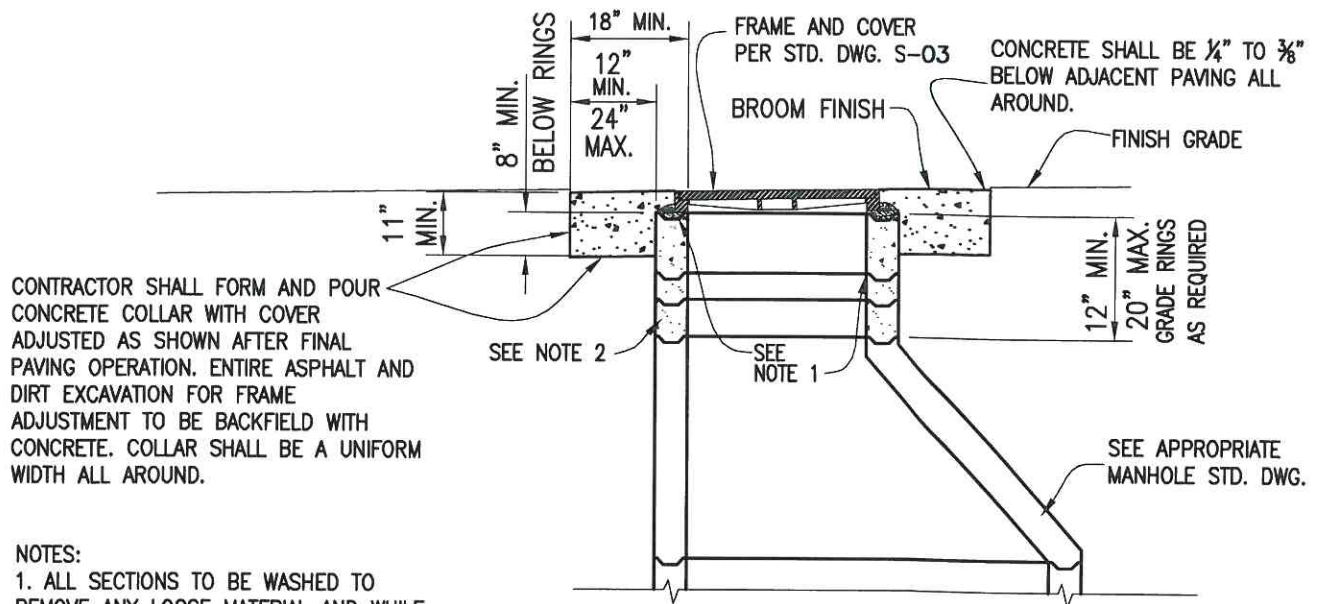
Arden Wallum  
General Manager

Drawn: Heitec Inc. Date: 01/14/08

DRAWING No.

S-03





CONTRACTOR SHALL FORM AND POUR CONCRETE COLLAR WITH COVER ADJUSTED AS SHOWN AFTER FINAL PAVING OPERATION. ENTIRE ASPHALT AND DIRT EXCAVATION FOR FRAME ADJUSTMENT TO BE BACKFIELD WITH CONCRETE. COLLAR SHALL BE A UNIFORM WIDTH ALL AROUND.

**NOTES:**

1. ALL SECTIONS TO BE WASHED TO REMOVE ANY LOOSE MATERIAL AND WHILE STILL WET, THEY ARE TO BE SET IN 1:3 MORTAR MIX TRIMMED SMOOTH INSIDE AND OUTSIDE, INCLUDING FRAME.

2. CONCRETE FOR GRADE RINGS SHALL BE 3000 P.S.I. MIN.

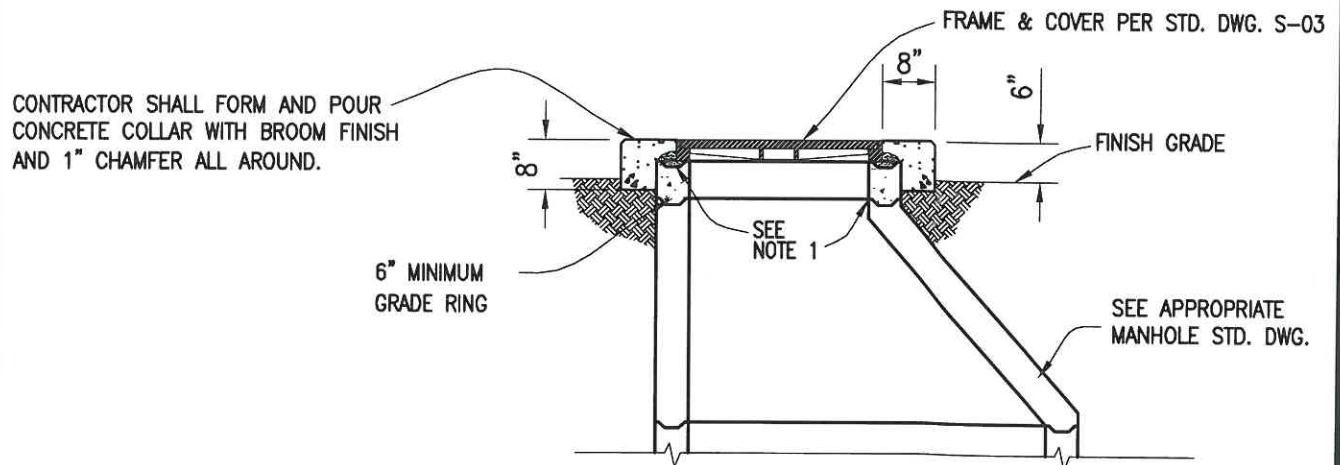
3. CONCRETE COLLAR SHALL BE 3250 P.S.I. MIN. WITH FIBERMESH AND BROOM FINSH.

4. FOR 60" MANHOLES USE 36" DIA. FRAME AND COVER.

**DETAIL FOR MANHOLE  
IN PAVED SURFACES**

**NOTE:**

24" GRADE RINGS PER MATERIAL LIST # S-05  
36" GRADE RINGS PER MATERIAL LIST # S-06



CONTRACTOR SHALL FORM AND POUR CONCRETE COLLAR WITH BROOM FINISH AND 1" CHAMFER ALL AROUND.

6" MINIMUM  
GRADE RING

**DETAIL FOR MANHOLES  
IN EASEMENTS**



**MANHOLE COLLAR  
AND GRADE RINGS  
DETAIL**

Approved:

Arden Wallum  
General Manager

Drawn: Heitec Inc. Date: 4/24/12

DRAWING No.

S-04







**NOTE:** USE 60" DIAMETER MANHOLE FOR MANHOLE DEPTH GREATER THAN 12' OR WHERE ANY SEWER IS LARGER THAN 18" DIAMETER.

**NOTES:**

1. ALL SECTIONS TO BE WASHED TO REMOVE ANY LOOSE MATERIAL AND WHILE STILL WET, THEY ARE TO BE SET IN 1:3 MORTAR TRIMMED SMOOTH INSIDE AND OUTSIDE, INCLUDING FRAME.

2. CONCRETE FOR MANHOLE SECTIONS 3000 P.S.I. MIN.

3. PROVIDE FLEXIBLE JOINT IN ALL SEWER PIPES OUTSIDE OF MANHOLE, BUT WITHIN 18" OF CONCRETE BASE. USE 24" MAXIMUM PIPE JOINT.

4. REINFORCED CONCRETE SECTIONS MAY BE USED WITH MSWD APPROVAL. THICKNESS MAY VARY PER MANUFACTURER.

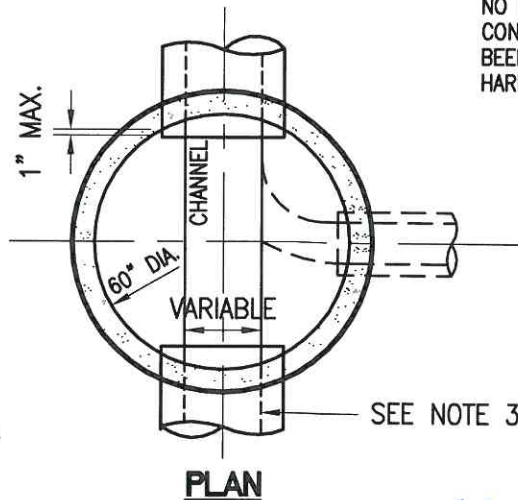
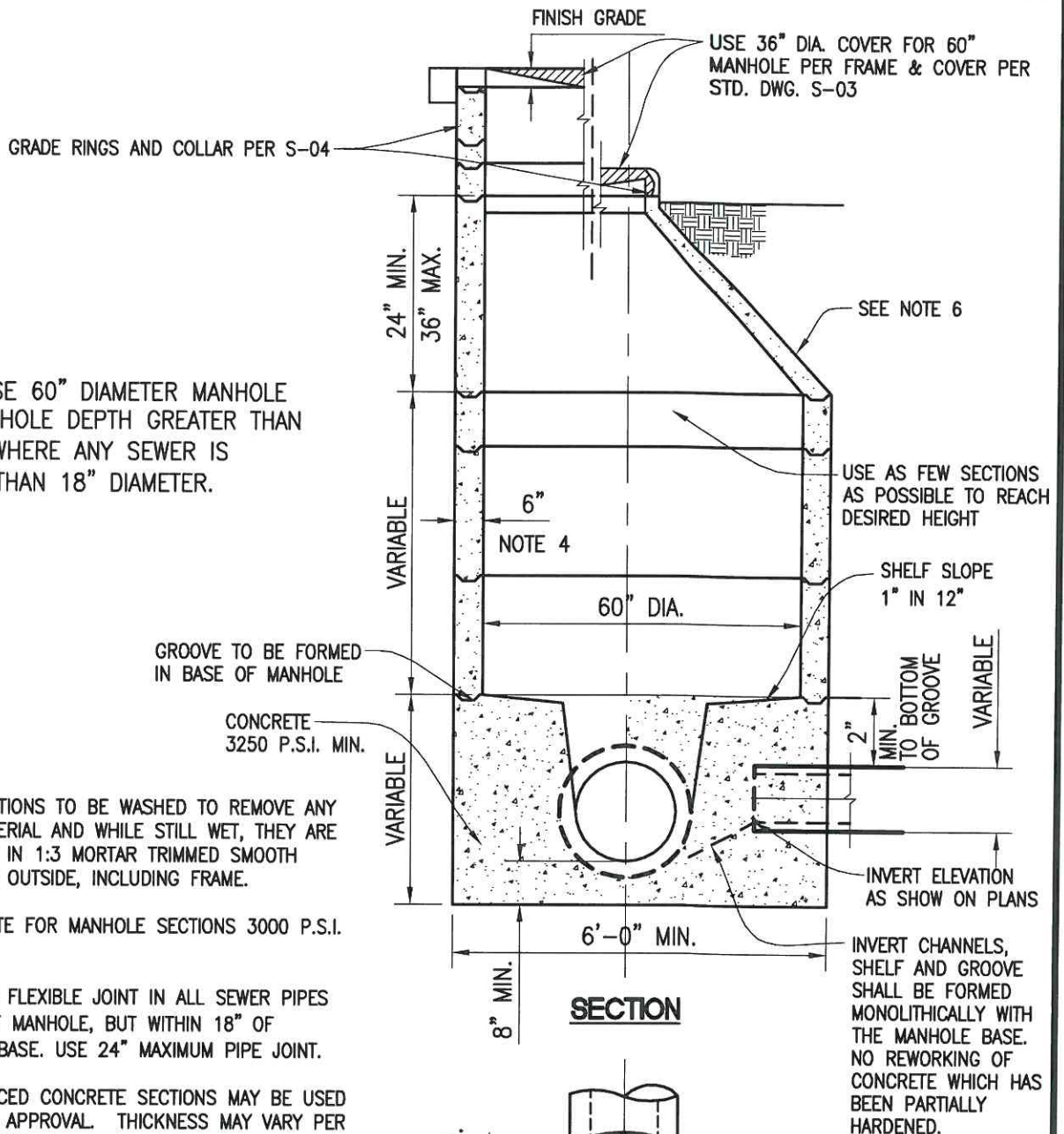
5. THE TOP OF MANHOLE SHALL BE PLACED DIRECTLY OVER THE OUTLET OF THE STRUCTURE EXCEPT AS OTHERWISE NOTED ON PLANS.

6. ECCENTRIC CONE SECTION SHALL BE INSTALLED WITH TAPERED SIDE FACING UPSTREAM.

**NOTE:**

60" MANHOLE SHAFT PER MATERIAL LIST # S-02

60"x 36" ECCENTRIC CONE PER MATERIAL LIST # S-04



5' DIAMETER  
PRECAST MANHOLE

Approved:

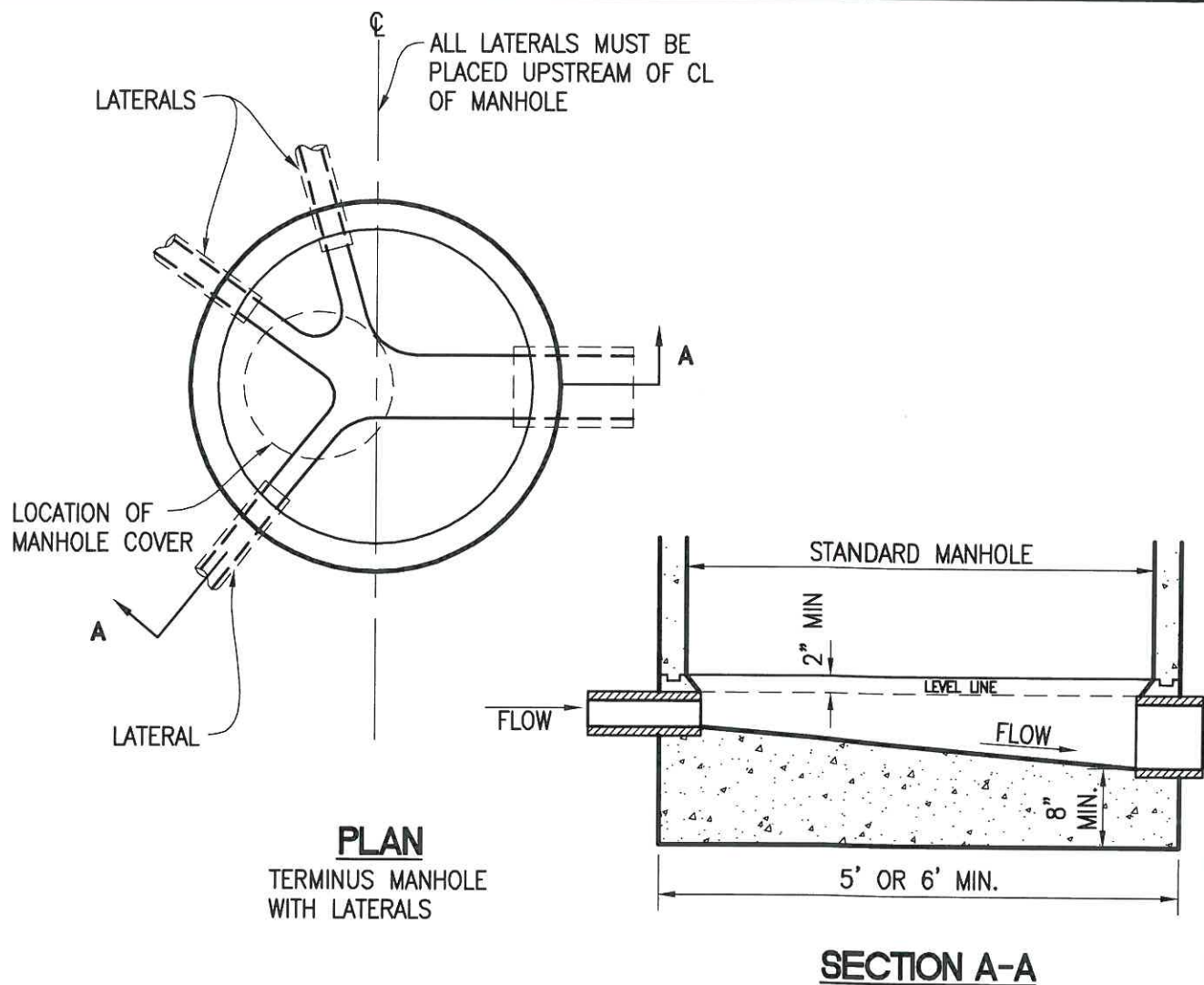
Arden Wallum  
General Manager

Drawn: Heitec Inc. Date: 01/14/08

DRAWING No.

S-06





NOTES:

1. REFER TO STANDARD DRAWINGS S-03, S-04, AND S-05 FOR DETAILS PERTAINING TO MANHOLES.
2. THE MAXIMUM NUMBER OF LATERALS INTO A TERMINUS MANHOLE SHALL BE LIMITED TO THREE.
3. ALL LATERAL CONNECTIONS SHALL BE ORIENTED SUCH WITHOUT IN LINE WITH ANY OF THE CONNECTING SEWER MAINS.



TERMINUS MANHOLE  
WITH LATERALS

Approved:

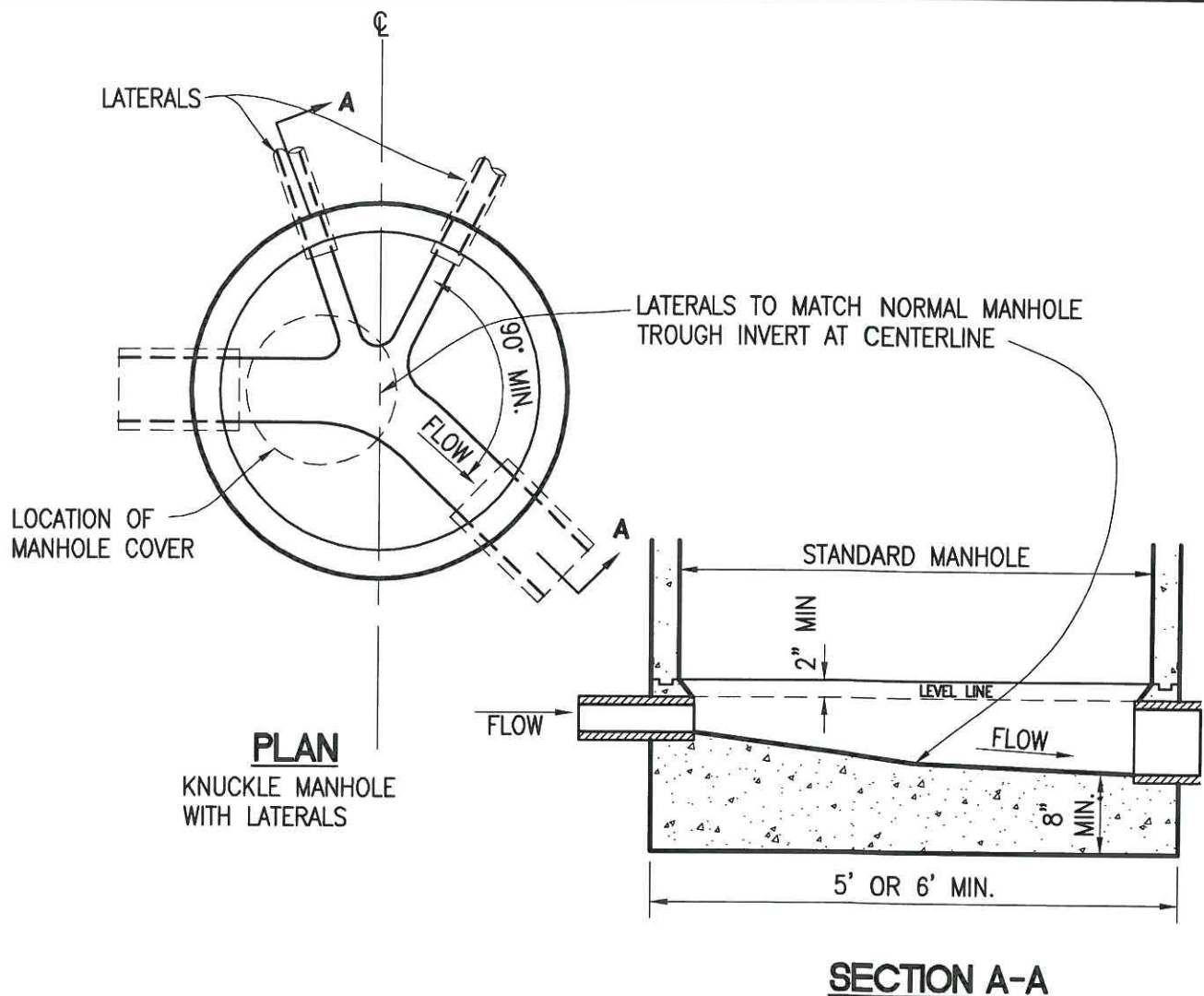
Arden Wallum  
General Manager

Drawn: Heitec Inc. Date: 4/24/12

DRAWING No.

S-07





NOTES:

1. REFER TO STANDARD DRAWINGS S-03, S-04, AND S-05 FOR DETAILS PERTAINING TO MANHOLES.
2. THE MAXIMUM NUMBER OF LATERALS INTO A KNUCKLE MANHOLE SHALL BE LIMITED TO TWO.
3. ALL LATERAL CONNECTIONS SHALL BE ORIENTED SUCH THAT THEY WILL NOT BE IN LINE WITH ANY OF THE CONNECTING SEWER MAINS.
4. ALL LATERAL INVERTS SHALL JOIN THE NORMAL CENTERLINE INVERT OF THE MANHOLE.



KNUCKLE MANHOLE  
WITH LATERALS

Approved:

Arden Wallum  
General Manager

Drawn: Heitec Inc. Date: 4/24/12

DRAWING No.

S-08



**DETAIL FOR MANHOLE  
IN PAVED SURFACES**

**NOTE:** FOR ANY SEWER LINE OVER 18" DIAMETER USE A 60" DIAMETER MANHOLE.

**NOTES:**

1. ALL SECTIONS ARE TO BE WASHED TO REMOVE ANY LOOSE MATERIAL AND, WHILE STILL WET, TO BE SET IN 1:3 MORTAR TRIMMED SMOOTH INSIDE AND OUTSIDE, INCLUDING FRAME, EXCEPT AS PROVIDED IN NOTE 4.

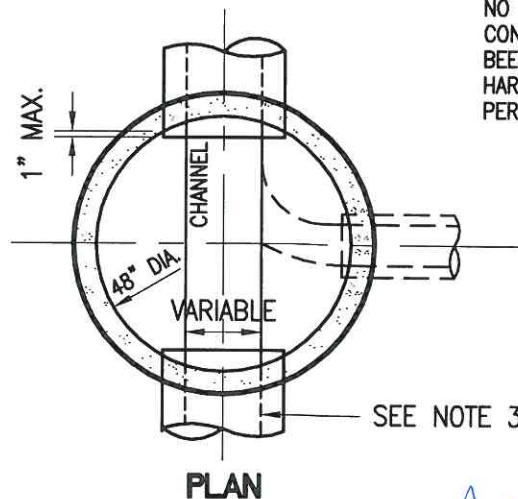
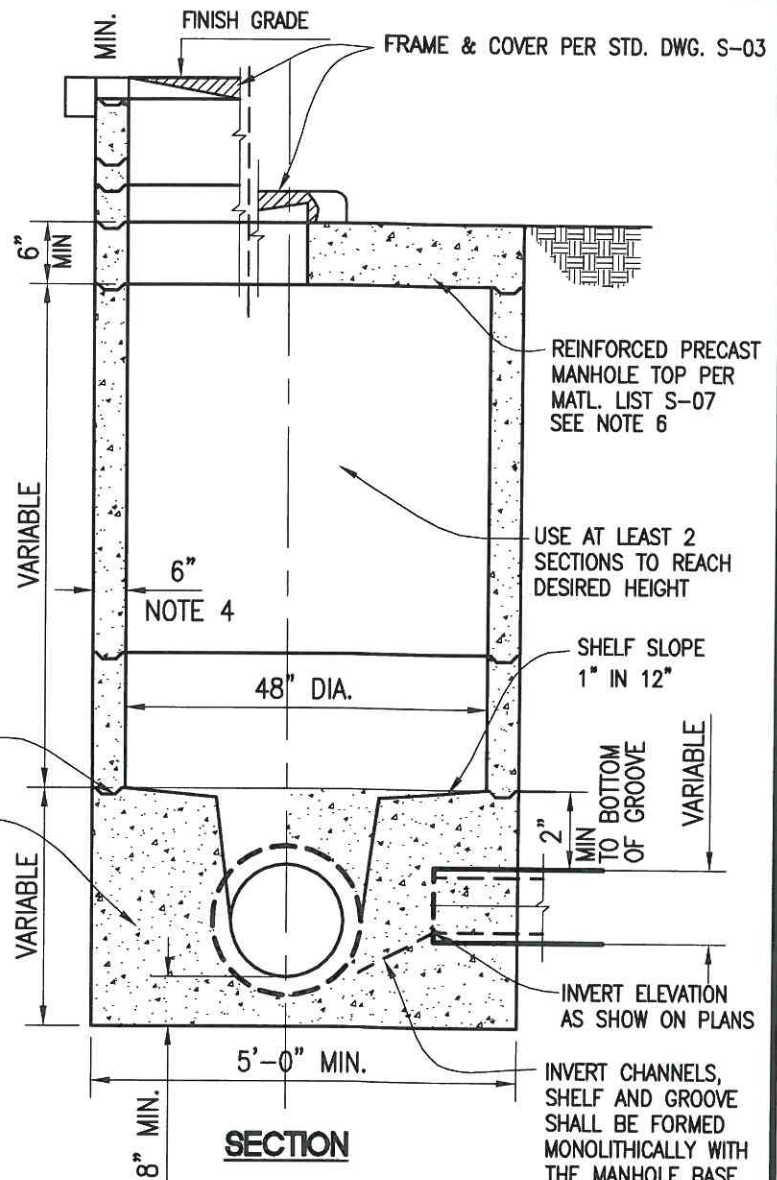
2. CONCRETE FOR MANHOLE SECTIONS TO BE 3000 P.S.I. MIN.

3. PROVIDE FLEXIBLE JOINT IN ALL SEWER PIPES OUTSIDE OF MANHOLE, BUT WITHIN 18" OF CONCRETE BASE. USE 24" MAXIMUM PIPE JOINT.

4. REINFORCED CONCRETE SECTIONS MAY BE USED WITH MSWD APPROVAL. THICKNESS MAY VARY PER MANUFACTURER.

5. THE TOP OF MANHOLE SHALL BE PLACED DIRECTLY OVER THE OUTLET OF THE STRUCTURE EXCEPT AS OTHERWISE NOTED ON PLANS.

6. PRECAST MANHOLE SLAB SHALL BE INSTALLED WITH MANHOLE FACING UPSTREAM.



PRECAST SHALLOW MANHOLE  
DEPTH LESS THAN 6'

Approved:

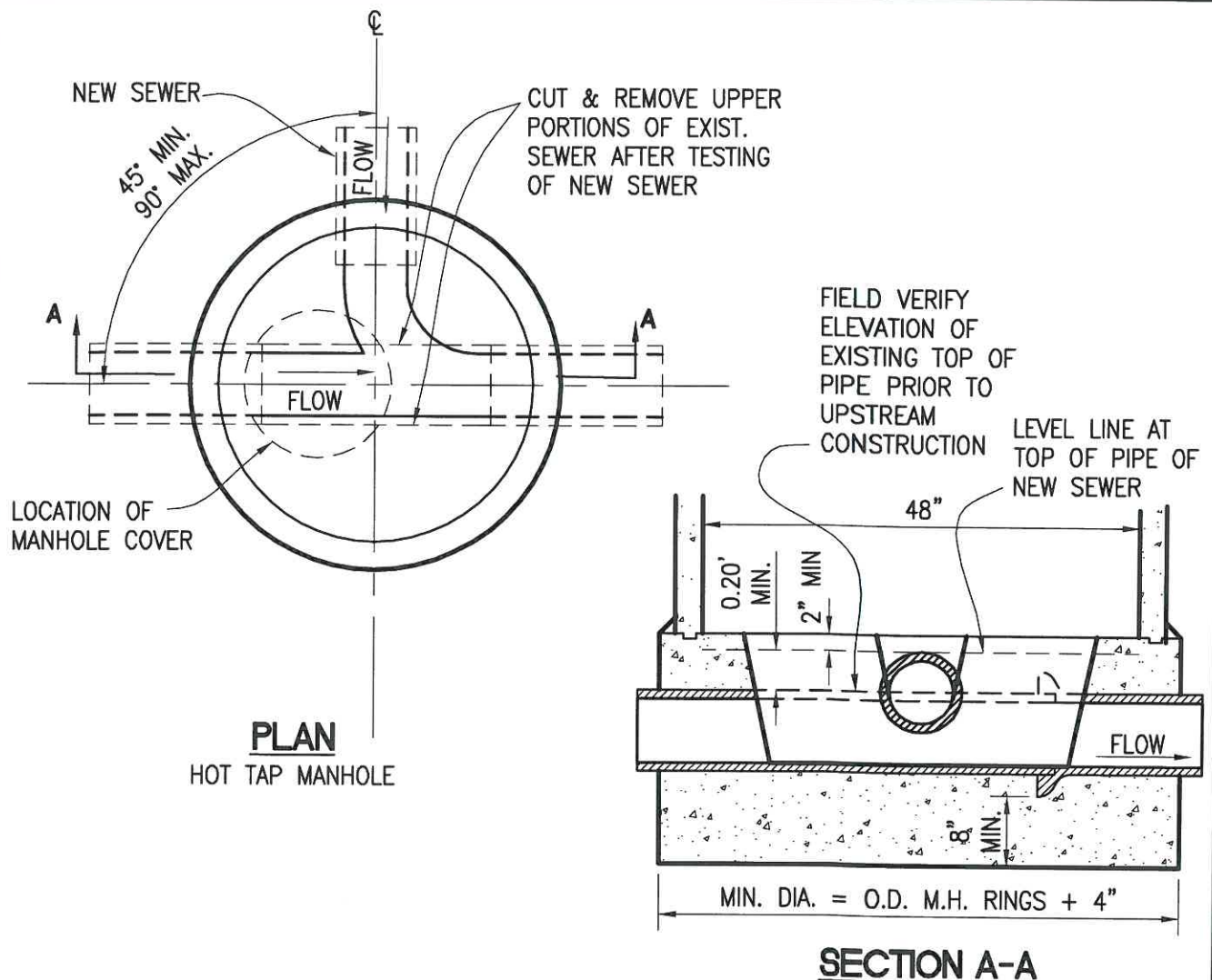
Arden Wallum  
General Manager

Drawn: Heitec Inc. Date: 01/21/08

DRAWING No.

S-09



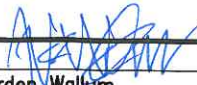


**NOTES:**

1. REFER TO STANDARD DRAWINGS S-03, S-04, AND S-05 FOR DETAILS PERTAINING TO MANHOLES.
2. NEW SEWER TO BE PLUGGED WITH MECHANICAL PLUG UNTIL SEWER HAS BEEN TESTED AND APPROVED BY THE MSWD INSPECTOR.
3. INTERFERING PORTIONS OF THE EXISTING PIPE SHALL TO BE BROKEN OUT TO A NEAT LINE. BROKEN EDGES SHALL BE PLASTERED SMOOTH WITH CEMENT MORTAR.
4. CARE SHALL BE TAKEN TO PREVENT BROKEN PIECES OF PIPE FROM ENTERING EXISTING SEWER. MSWD MAY REQUIRE TEMPORARY PLUG IN EXISTING SEWER UPSTREAM OF CONNECTION DURING BREAKOUT OPERATIONS.
5. ANY EXISTING BELL JOINT WITHIN THE MANHOLE BASE SHALL BE SUPPORTED DURING EXCAVATION AND POUR TO PREVENT SETTLEMENT.
6. PROVIDE FLEXIBLE JOINT WITHIN 18" OF MANHOLE BASE ON NEW SEWER.
7. NEW CHANNEL SHALL BE FORMED AND FINISHED TO PROVIDE A SMOOTH TRANSITION INTO EXISTING TROUGH.
8. ALL WORK ON ACTIVE SEWER SHALL BE DONE UNDER DIRECT DISTRICT SUPERVISION.



HOT TAP  
MANHOLE

Approved: 

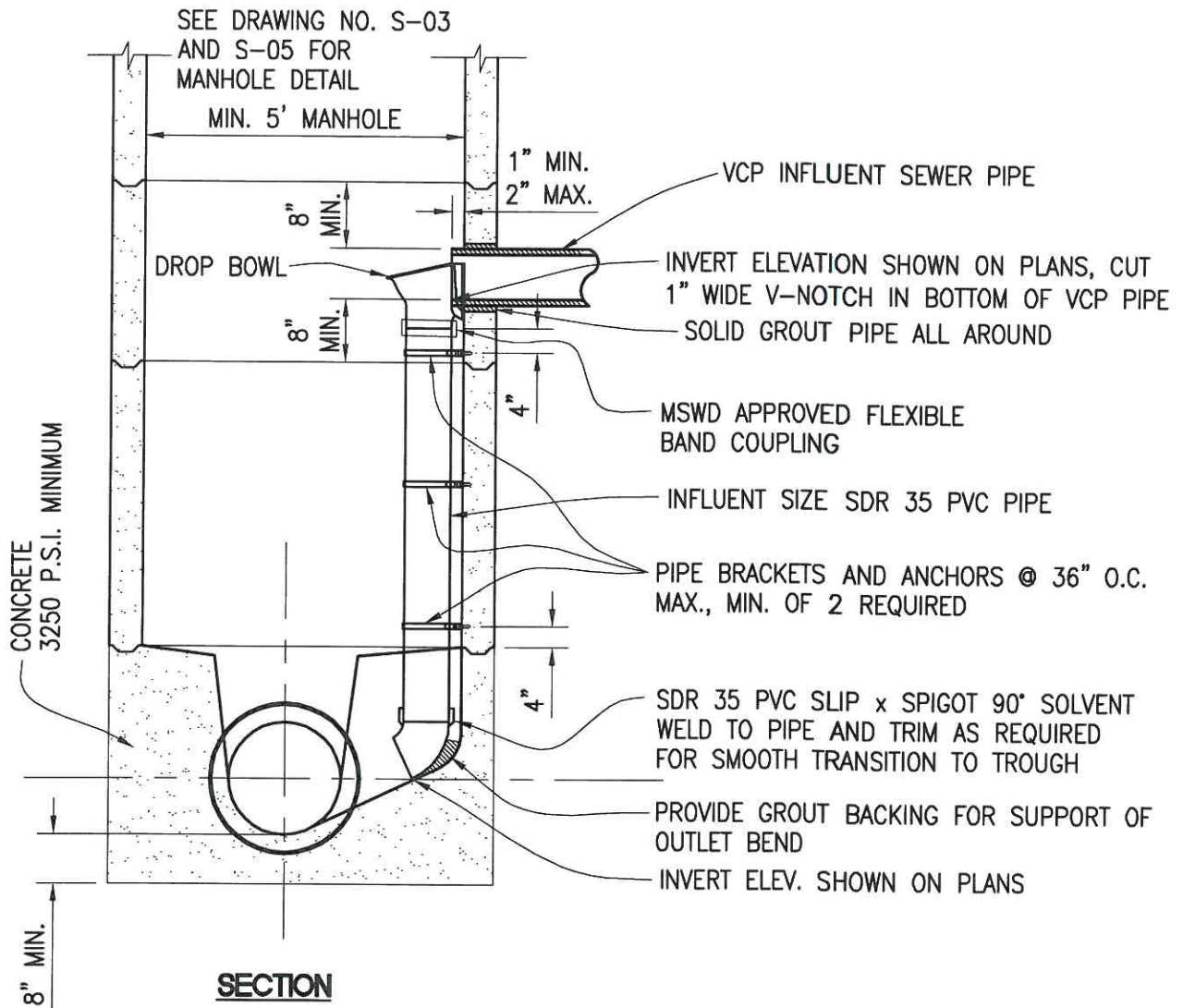
Arden Wallum  
General Manager

Drawn: Heitec Inc. Date: 8/29/12

DRAWING No.

S-10





**NOTES:**

1. DROP BOWL AND MOUNTING HARDWARE SHALL BE RELINER/DURAN "B" DROP BOWL SIZED FOR INFLUENT SEWER SIZE AND MANHOLE DIAMETER, OR APPROVED EQUAL, INSTALLED PER MANUFACTURERS SPECIFICATIONS.
2. DROP BOWL SHALL BE CENTERED DIRECTLY BELOW INFLUENT PIPE WITH APPROXIMATELY 1" CLEARANCE BELOW PIPE AND SHALL BE ATTACHED USING  $\frac{3}{8}$ " x 1" STAINLESS STEEL ANCHOR KTS SUPPLIED BY THE APPROVED MANUFACTURER.
3. PIPE BRACKETS SHALL BE 11 GAUGE 304 STAINLESS STEEL 1  $\frac{1}{2}$ " WIDE WITH STAINLESS STEEL HARDWARE AS SUPPLIED BY THE APPROVED MANUFACTURER.
4. THE MANHOLE CONE SECTION SHALL BE PLACED TO ALLOW CLEAR ACCESS WITHOUT INTERFERENCE WITH THE DROP ASSEMBLY, LOCATION TO BE APPROVED BY MSWD INSPECTOR.
5. USE OF THE DROP MANHOLE SHALL REQUIRE PRIOR APPROVAL BY MSWD ENGINEERING STAFF.



INSIDE DROP MANHOLE

Approved: 

Arden Wallum  
General Manager

Drawn: Heitec Inc. Date: 06/6/12

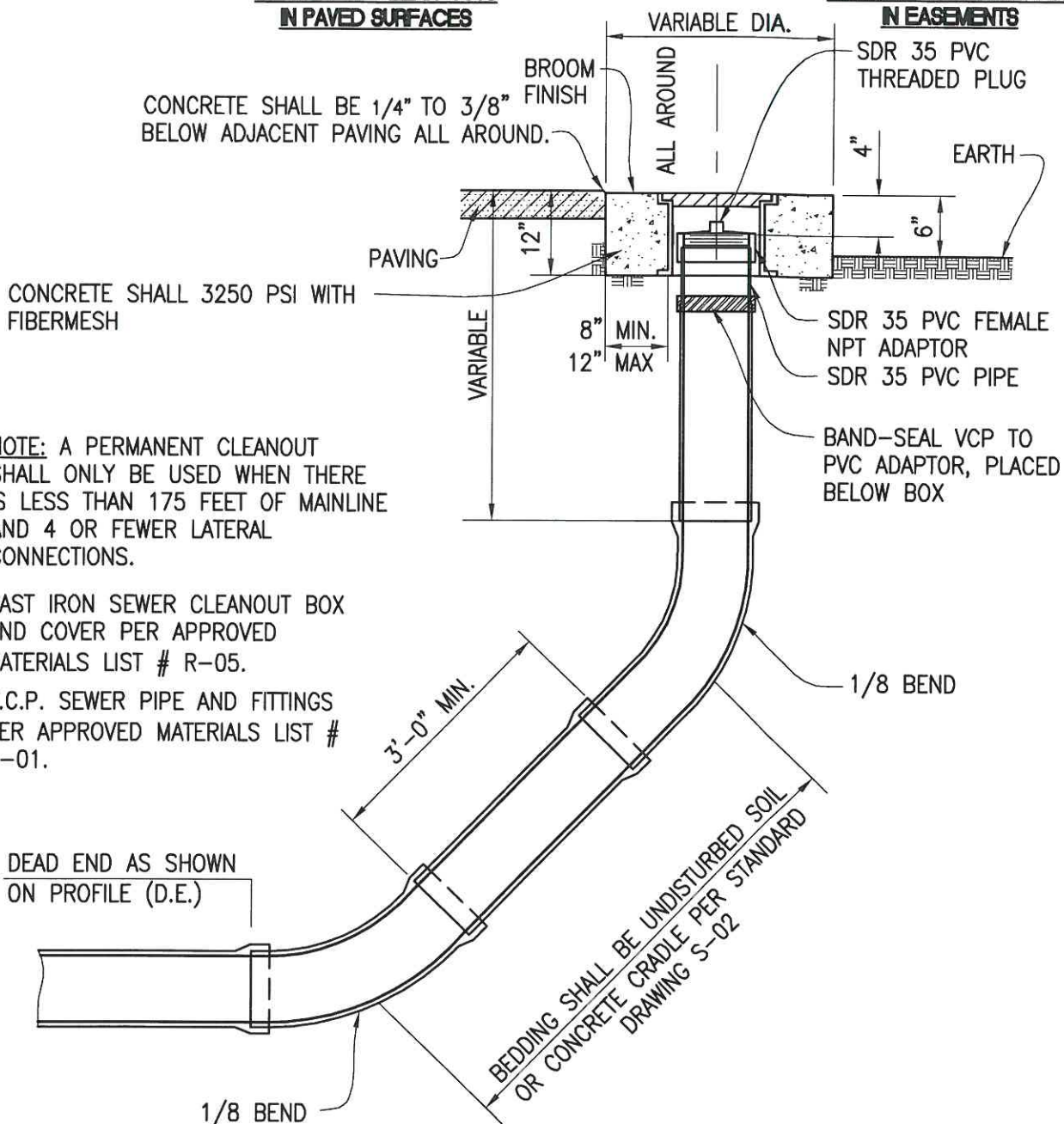
DRAWING No.

S-11



**DETAIL FOR CLEAN-OUTS  
IN PAVED SURFACES**

**DETAIL FOR CLEAN-OUTS  
IN EASEMENTS**



**NOTE:**

CLEAN-OUT TO BE OF THE SAME MATERIAL & SIZE AS SEWER MAIN. THE SEWER MAIN SHALL BE LAID FOR THE FULL LENGTH & DEPTH SHOWN ON THE PLAN & PROFILE TO THE STATION MARKED DEAD END (D.E.). THE TRENCH FOR A DEAD END SHALL BE EXCAVATED ONLY TO SUBGRADE WHICH IS THE BOTTOM OF THE SLOPING PIPE AND FITTINGS. SHOULD THE EXCAVATION, FOR ANY REASON, BE CARRIED BELOW SUBGRADE, IT SHALL BE REFILLED TO SUBGRADE WITH ROCK OR GRAVEL, WHICH SHALL BE TAMPED UNTIL FIRM AND UNYIELDING. SHOULD A FIRM AND UNYIELDING FOUNDATION BE UNATTAINABLE BY THIS METHOD, A CONCRETE PIPE CRADLE SHALL BE USED.



MAINLINE CLEANOUT

Approved:

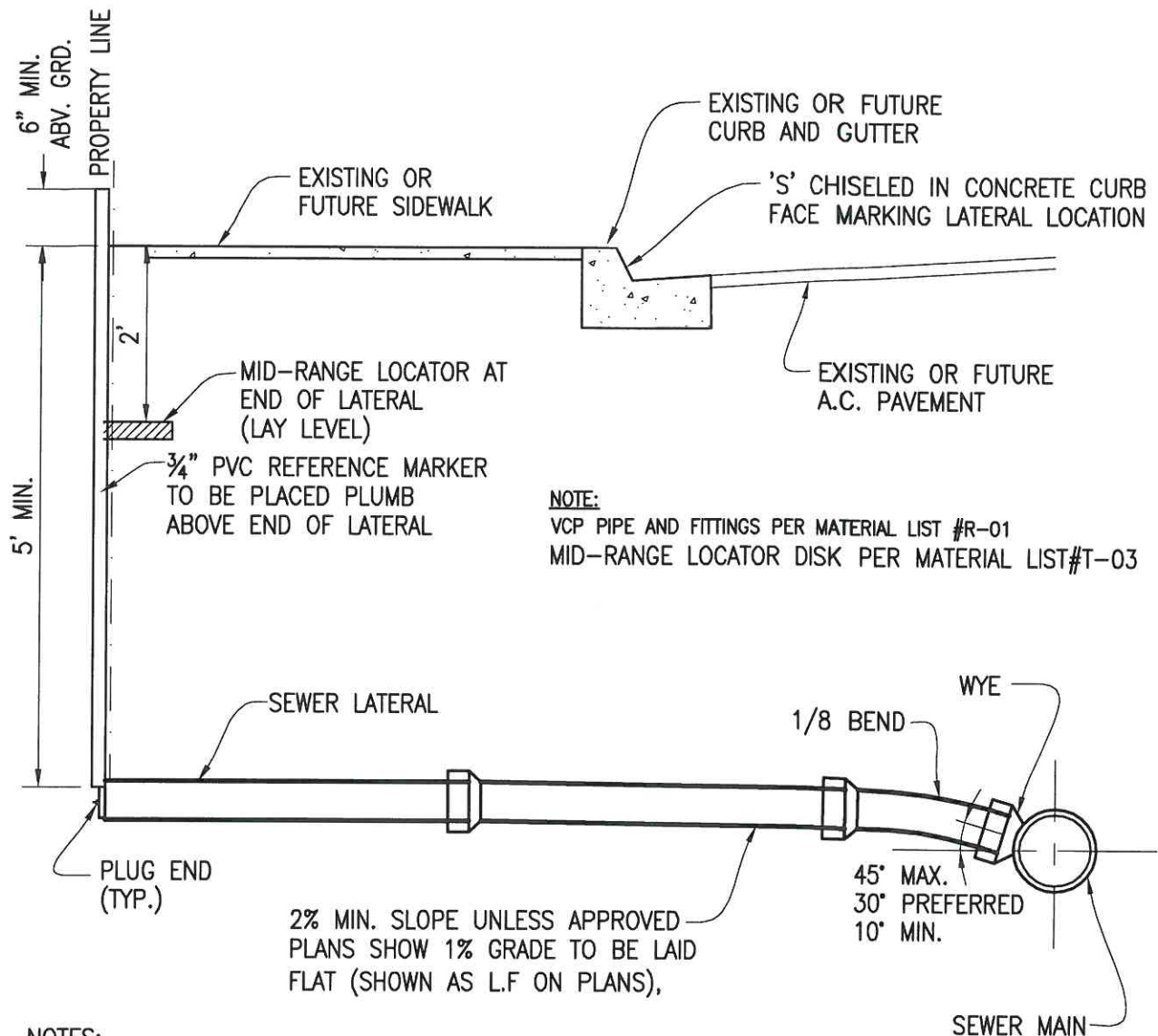
Arden Wallum  
General Manager

Drawn: Heitec Inc. Date: 5/5/12

DRAWING No.

S-12





NOTES:

1. 4" V.C.P. SHALL BE PROVIDED FOR ALL SINGLE-FAMILY DWELLING UNITS. 6" V.C.P. SHALL BE PROVIDED FOR ALL COMMERCIAL UNITS. MULTI-FAMILY UNITS SIZED PER PLAN, NO LATERALS OVER 6" WILL BE ALLOWED.
2. LATERAL LOCATIONS, AS NOTED ON THE 'AS-BUILT' PLANS, SHALL BE MEASURED AT RIGHT ANGLES TO STREET CENTERLINE, FROM THE CENTERLINE OF THE NEAREST DOWNSTREAM MANHOLE COVER, DEPTH FROM FINISH GRADE AND LENGTH AT THE END OF LATERAL AT CUSTOMERS' PROPERTY LINE.
3. CONTRACTOR SHALL REFERENCE EACH LATERAL IN THE FIELD WITH A SURFACE MARKER. MARKER SHALL BE A SCH 40 PVC MARKER LIST PLACED AT TIME OF BACKFILLING. MARKER SHALL BE INSTALLED VERTICAL, CUT OFF AT 6" MIN. ABOVE GRADE.
4. LATERAL SHALL BE INSTALLED AT A CONSTANT GRADE UNLESS SPECIFICALLY APPROVED BY THE MSWD INSPECTOR.



SEWER LATERAL

Approved:

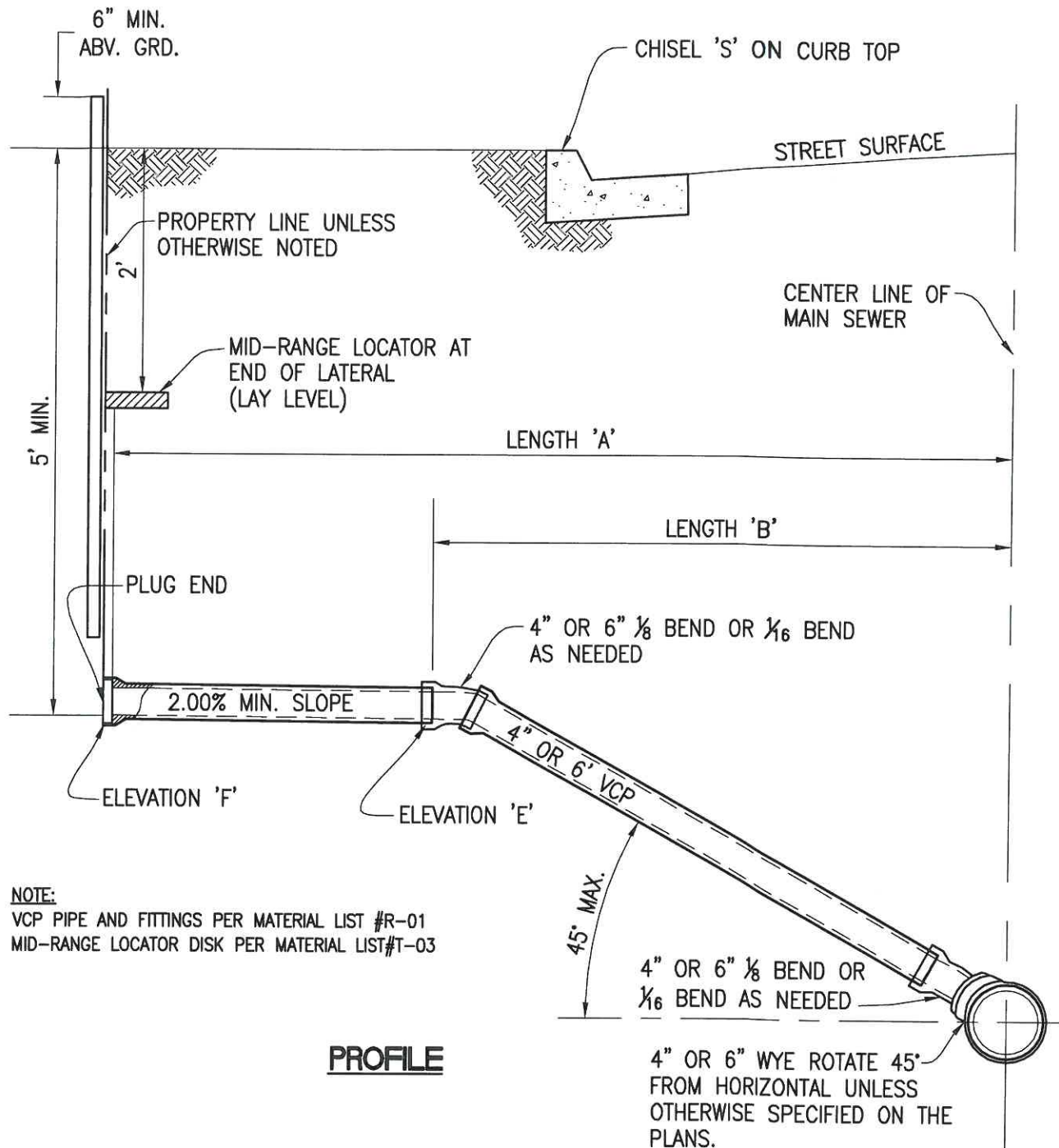
Arden Wallum  
General Manager

Drawn: Heitec Inc. Date: 06/20/11

DRAWING No.

S-13





**NOTE:**

VCP PIPE AND FITTINGS PER MATERIAL LIST #R-01  
MID-RANGE LOCATOR DISK PER MATERIAL LIST #T-03

**PROFILE**

**NOTES:**

1. SEE SEWER CONSTRUCTION PLANS FOR LENGTH 'A', LENGTH 'B' AND ELEVATIONS 'E' AND 'F'.
2. PIPE FOR SEWER LATERALS SHALL BE 4" OR 6" CLAY PIPE, NO LARGER LATERALS ARE ALLOWED.



LATERAL FOR DEEP SEWER  
WITHOUT UTILITY CROSSING

Approved:

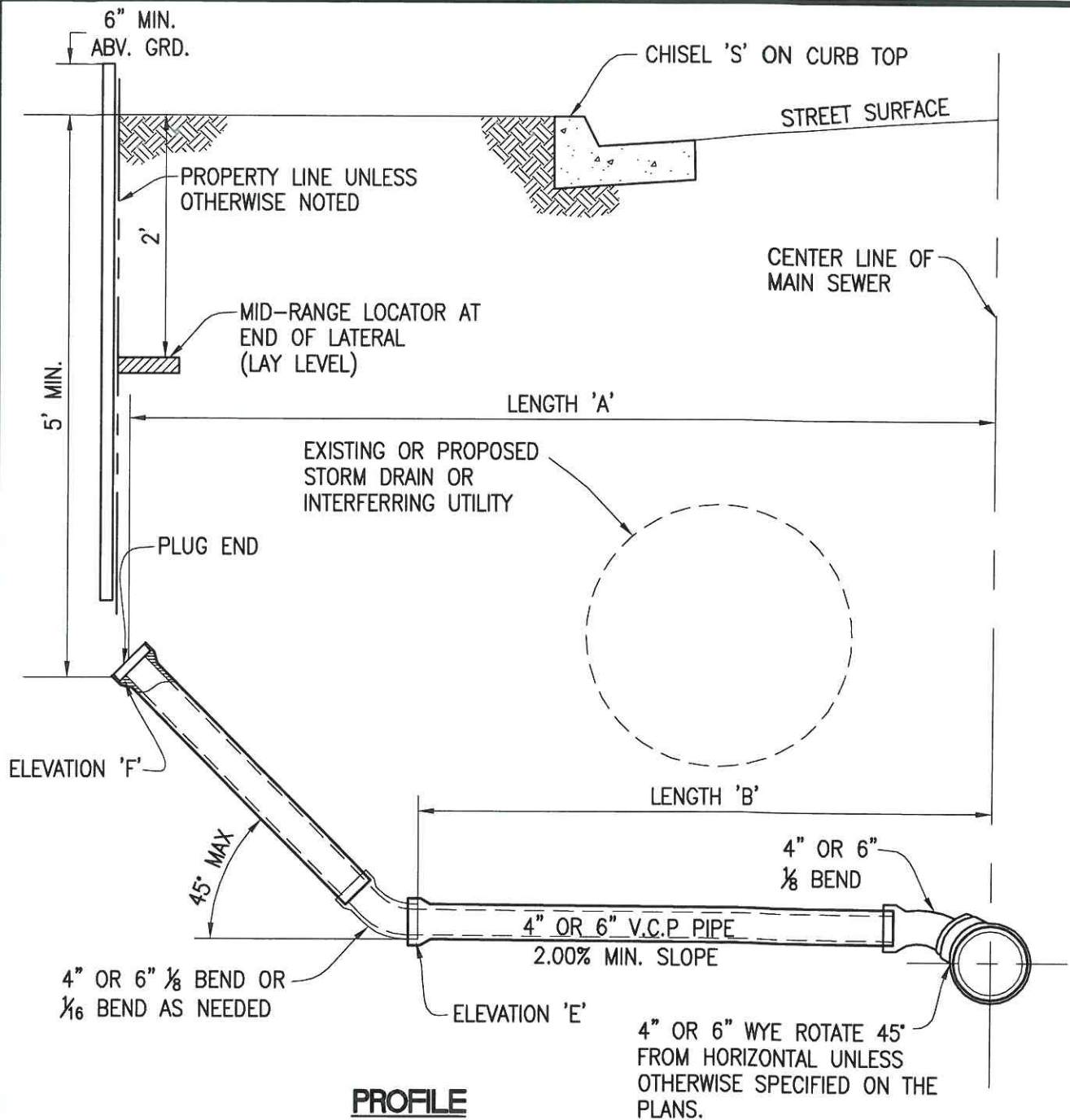
Arden Wallum  
General Manager

Drawn: Heitec Inc. Date: 06/20/11

DRAWING No.

S-14





**NOTES:**

1. SEE SEWER CONSTRUCTION PLANS FOR LENGTH 'A', LENGTH 'B' AND ELEVATIONS 'E' AND 'F'.
2. PIPE FOR SEWER LATERALS SHALL BE 4" OR 6" CLAY PIPE. NO LATERALS OVER 6" ARE ALLOWED.

**NOTE:**

VCP PIPE AND FITTINGS PER MATERIAL LIST #R-01  
MID-RANGE LOCATOR DISK PER MATERIAL LIST#T-03



LATERAL FOR DEEP SEWER  
WITH UTILITY CROSSING

Approved:

Arden Wallum  
General Manager

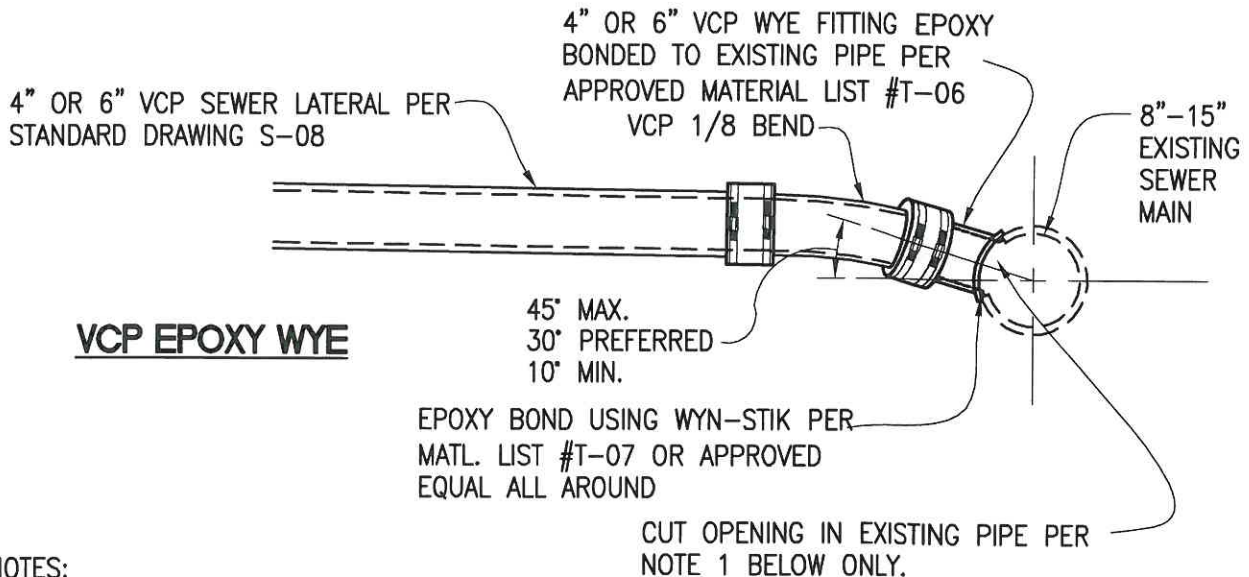
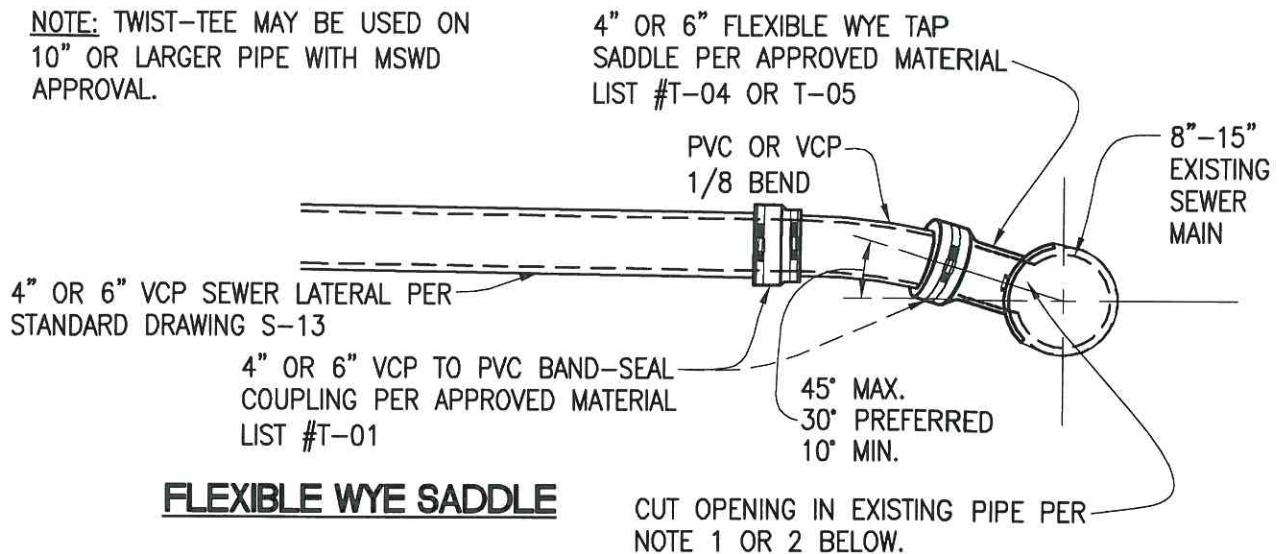
Drawn: Heitec Inc. Date: 06/20/11

DRAWING No.

S-15



**NOTE:** TWIST-TEE MAY BE USED ON 10" OR LARGER PIPE WITH MSWD APPROVAL.



**NOTES:**

1. OPENING IN EXISTING VCP PIPE SHALL BE CUT ON THE ANGLE OF THE WYE FITTING USING A STABILIZED SHELL CUTTER SIZED PER MANUFACTURERS SPECIFICATION OF SUFFICIENT DEPTH TO PERFORM A CLEAN ELLIPTICAL CUT COMPLETELY THROUGH THE EXISTING PIPE WALL AND CUT SHALL NOT BE WITHIN 2' OF AN EXISTING PIPE JOINT.
2. TRACE ELLIPTICAL PATTERN ON THE EXISTING PIPE THROUGH THE WYE FITTING AND CUT A 4" OR 6" STARTER HOLE WITH A STANDARD HOLE SAW. THEN SHAPE OPENING TO FIT USING A DIAMOND CUTTER.
3. ALL CUTTINGS SHALL BE REMOVED FROM PIPE AND WYE FITTING SHALL BE TESTED FOR FLUSH FIT TO EXISTING MAIN IN THE PRESENCE OF THE MSWD INSPECTOR PRIOR TO PERMANENT ATTACHMENT OF THE FITTING.
4. ALL MAINS WITH HOT TAP LATERAL TO BE VIDEO INSPECTED PER MSWD SPECIFICATIONS PRIOR TO ACCEPTANCE.



HOT TAP  
SEWER LATERAL

Approved: 

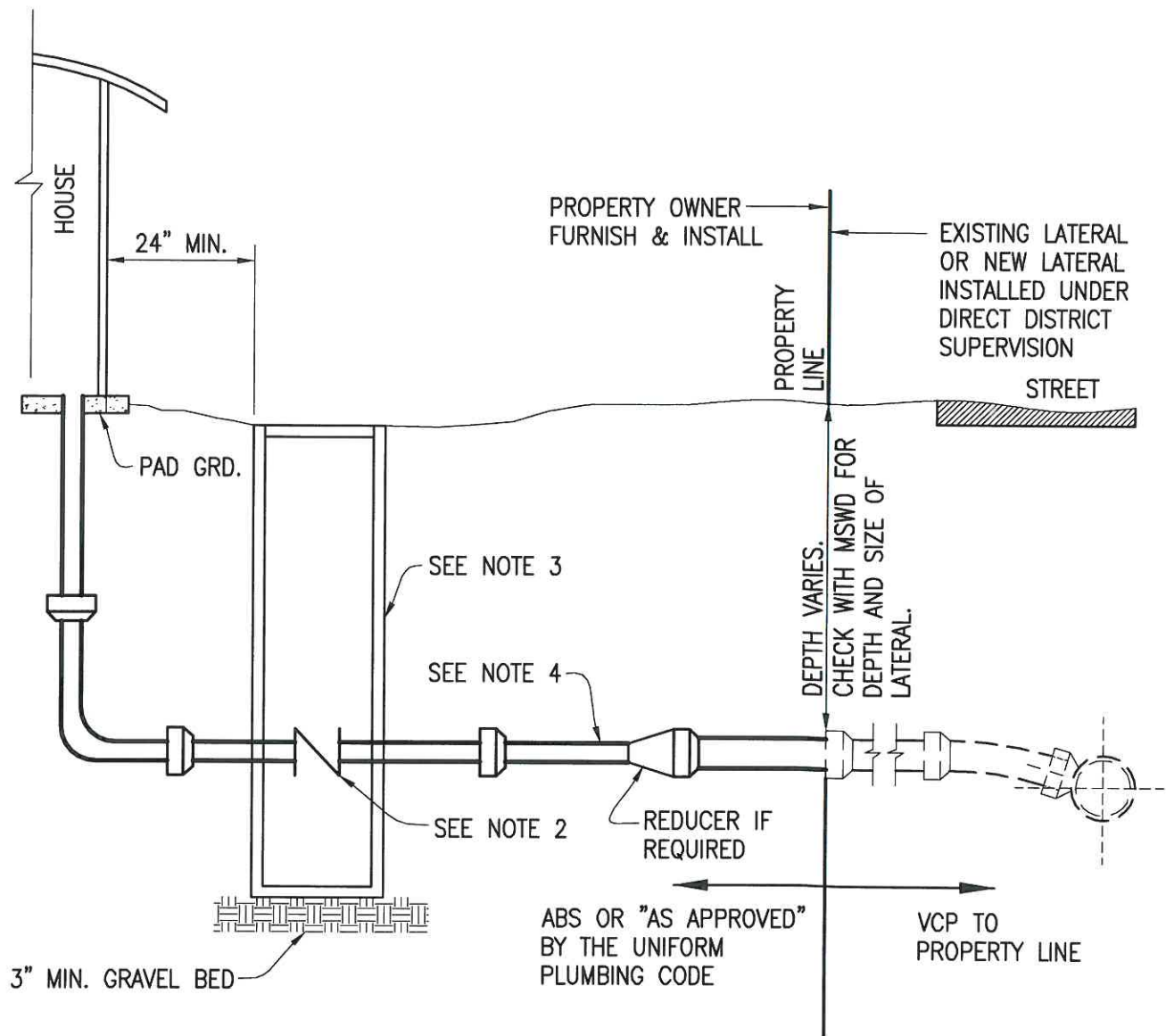
Arden Wallum  
General Manager

Drawn: Heitec Inc. Date: 04/24/12

DRAWING No.

S-16





NOTES:

1. MAINTENANCE OF THE LATERAL TO THE SEWER MAIN IS THE RESPONSIBILITY OF THE PROPERTY OWNER.
2. A BACKWATER VALVE SHALL BE PROVIDED BY THE OWNER AS SPECIFIED IN THE UNIFORM PLUMBING CODE WHERE THE PAD ELEVATION OF THE PROPERTY IS LOCATED BELOW THE ELEVATION OF THE TOP OF THE NEXT UPSTREAM MANHOLE ON THE MAIN SEWER. THE BACKWATER VALVE SHALL BE PER LOCAL AGENCY STANDARDS.
3. THE BACKWATER VALVE, IF REQUIRED, SHALL BE ENCLOSED IN A VALVE BOX OR A VAULT IN ACCORDANCE WITH LOCAL AGENCY STANDARDS.
4. SEWER LATERAL SHALL BE AT A 2% MINIMUM SLOPE UNLESS OTHERWISE APPROVED.



SEWER LATERAL ON  
PRIVATE PROPERTY

Approved:

Arden Wallum  
General Manager

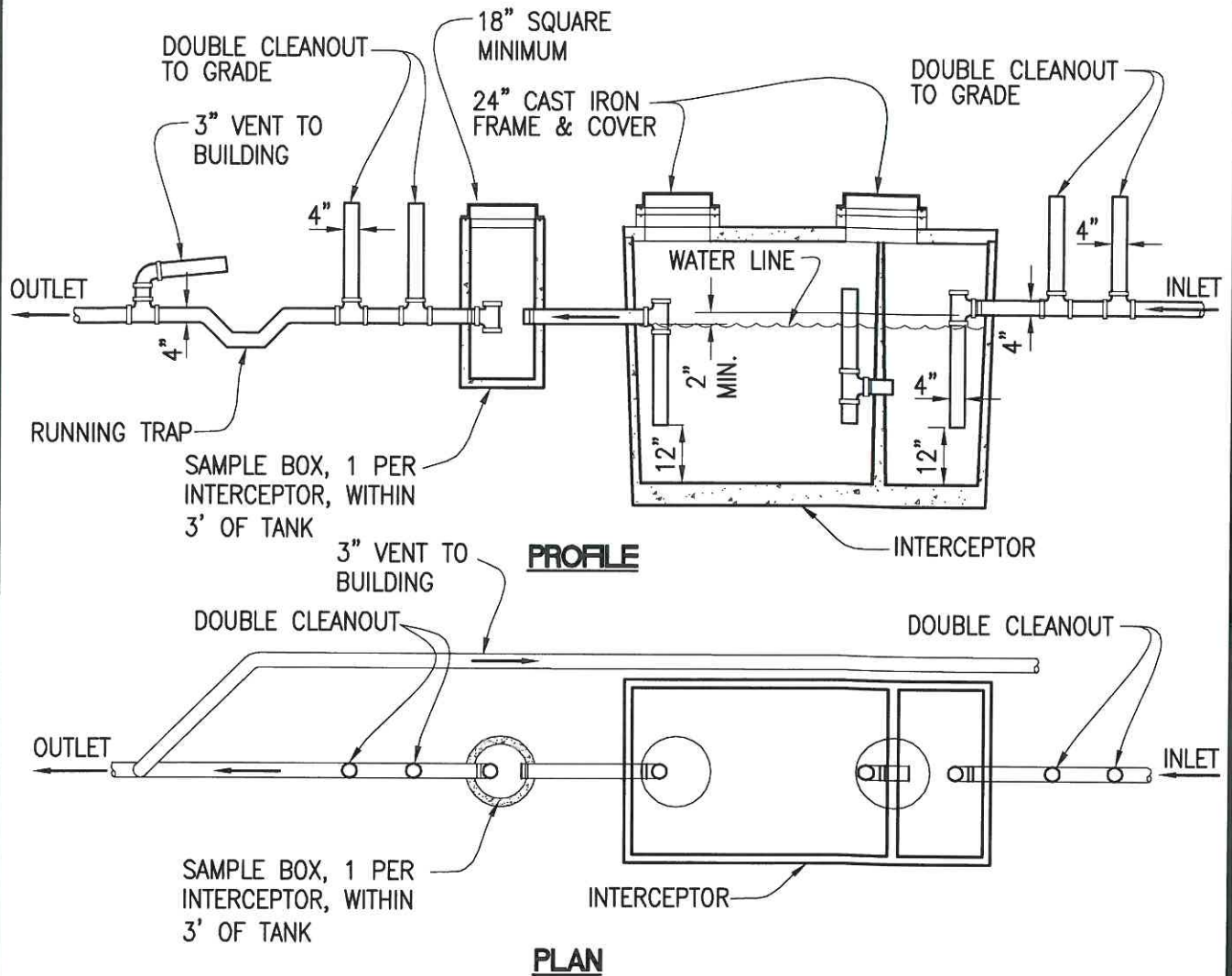
Drawn: Heitec Inc. Date: 01/21/08

DRAWING No.

S-17



WHERE APPLICABLE, TRAFFIC BEARING TOP MUST BE INSTALLED



**NOTES:**

1. MINIMUM SIZE FOR ALL GREASE INTERCEPTORS SHALL BE 1000 GALLONS.
2. CONSTRUCTION MATERIALS SHALL BE PRECAST CONCRETE.
3. A 24" DIAMETER SANITARY MANHOLE RING AND COVER SHALL BE INSTALLED TO GRADE OVER BOTH THE INLET AND OUTLET SANITARY TEES FOR INSPECTION PURPOSES.
4. INLET AND OUTLET PIPES MUST BE 4" OR LARGER SCHEDULE 40 ABS OR CAST IRON PIPE AND THE INLET PIPE SHALL BE 2" HIGHER THAN THE OUTLET PIPE.
5. A SANITARY TEE MUST BE INSTALLED ON BOTH THE INLET AND OUTLET PIPES. THE INLET AND OUTLET PIPES SHALL BOTH EXTEND TO WITHIN 12" OF THE INTERCEPTOR FLOOR.
6. WHEN AN INTERCEPTOR IS INSTALLED IN A TRAFFIC AREA, THE TOP MUST MEET SPECIFICATIONS FOR TRAFFIC BEARING SLABS.
7. A DOUBLE COMBINATION TEE MUST BE INSTALLED ON BOTH THE INLET AND OUTLET PIPES JUST OUTSIDE OF THE INTERCEPTOR AND SAMPLE BOX.
8. ALL MANHOLES, CLEANOUTS, AND SAMPLE BOX ACCESS SHALL BE ACCESSABLE AT GRADE AND SHALL BE CAPPED OR GASKETED VAPOR TIGHT.



**GREASE INTERCEPTOR**

Approved:

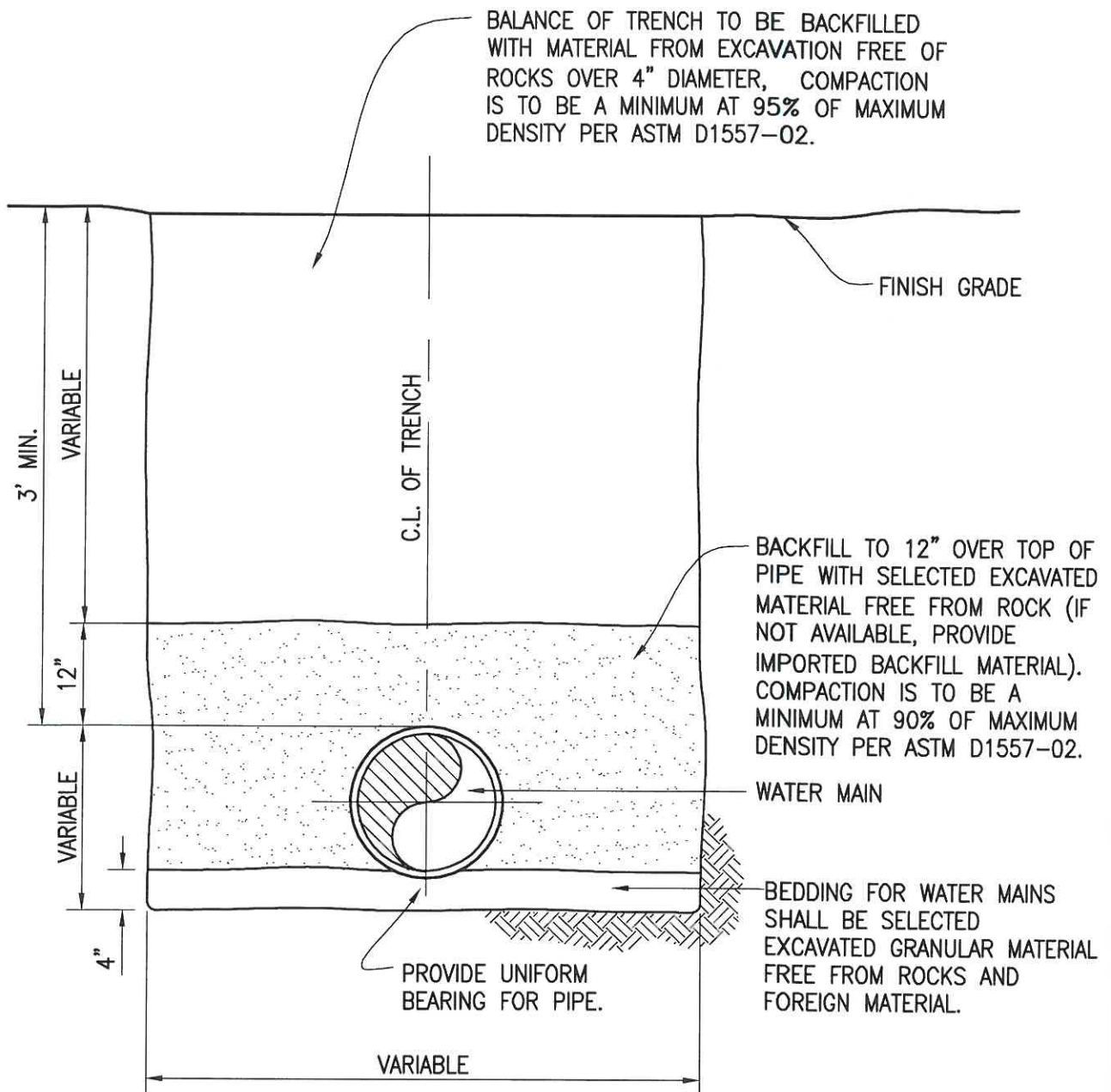
Arden Wallum  
General Manager

Drawn: Heitec Inc. Date: 9-07-10

DRAWING No.

S-18





MIN. WIDTH OF TRENCH FOR 4" TO 12" DIA. PIPE = O.D. PIPE + 12"

NOTES:

1. WHERE BOTTOM OF EXCAVATION IS IN ROCK WHICH CANNOT BE EXCAVATED TO PROVIDE UNIFORM BEARING FOR THE PIPE, OVEREXCAVATE 6" MINIMUM BELOW DESIGN GRADE AND REFILL IN 3" THICK COMPACTED LAYERS WITH SELECTED EXCAVATED MATERIAL OR PROVIDE IMPORTED BACKFILL MATERIAL PER SPECIFICATIONS
2. PIPE COVER SHALL BE 3' MINIMUM FOR 8" DIA.  
FOR 12" DIA. WATER MAINS AND LARGER, MINIMUM COVER SHALL BE 4'.



TYPICAL WATER TRENCH  
DETAIL

Approved:

Arden Wallum  
General Manager

Drawn: Hietec Inc. Date: 6/24/11

DRAWING No.

W-01



CONCRETE SHALL 3250 PSI MIN. WITH FIBERMESH AND BROOM FINISH

1 TRIANGULAR TRAFFIC RATED CAST IRON FRAME AND COVER MARKED "WATER MSWD"

CONCRETE SHALL BE 1/4" TO 3/8" BELOW ADJACENT PAVING ALL AROUND.

FINISH GRADE CONCRETE

A.C. PAVEMENT

CONCRETE COLLAR. 32" ROUND MINIMUM, VARIED UNIFORMLY TO INCLUDE ALL VALVES IN CLUSTER. PLACE AGAINST COMPACTED EARTH, 95% MAXIMUM DRY DENSITY PER ASTM D1557-02.

2" SQ. OPERATING NUT

PER APPROVED MATERIAL LIST

4 FIBERGLASS STEM EXTENSION

### BRACING PLATE DETAIL

BUTTERFLY VALVE, OPERATOR NUT TO RIGHT, DIRECTIONAL ARROW AWAY FROM FITTING

PROVIDE VALVE STEM EXTENSION WHERE DEPTH TO OPERATOR NUT EXCEEDS 2'.

3 8" DIA. SDR-35 PVC PIPE

GATE VALVE, DIRECTIONAL ARROW AWAY FROM FITTING

GATE VALVE OR BUTTERFLY VALVE PER APPD. MATL. LIST

### LAYOUT PLAN

2 OR 5

ITEM	No. Req'd.	DESCRIPTION	Matl. List#
1	1	TRIANGULAR TRAFFIC FRAME AND COVER MARKED "MSWD WATER"	G-04
2	1*	FLANGED GATE VALVE	B-01
3	VARIABLE	8" DIA. x REQUIRED LENGTH SDR-35 PVC	N-05
4	If Req'd.	FIBERGLASS VALVE STEM EXTENSION	N-07
5	1*	FLANGED BUTTERFLY VALVE	B-02

\* USE GATE VALVE FOR 12" AND SMALLER PIPES OR BUTTERFLY VALVE FOR PIPES LARGER THAN 12".



### VALVE INSTALLATION

Approved:

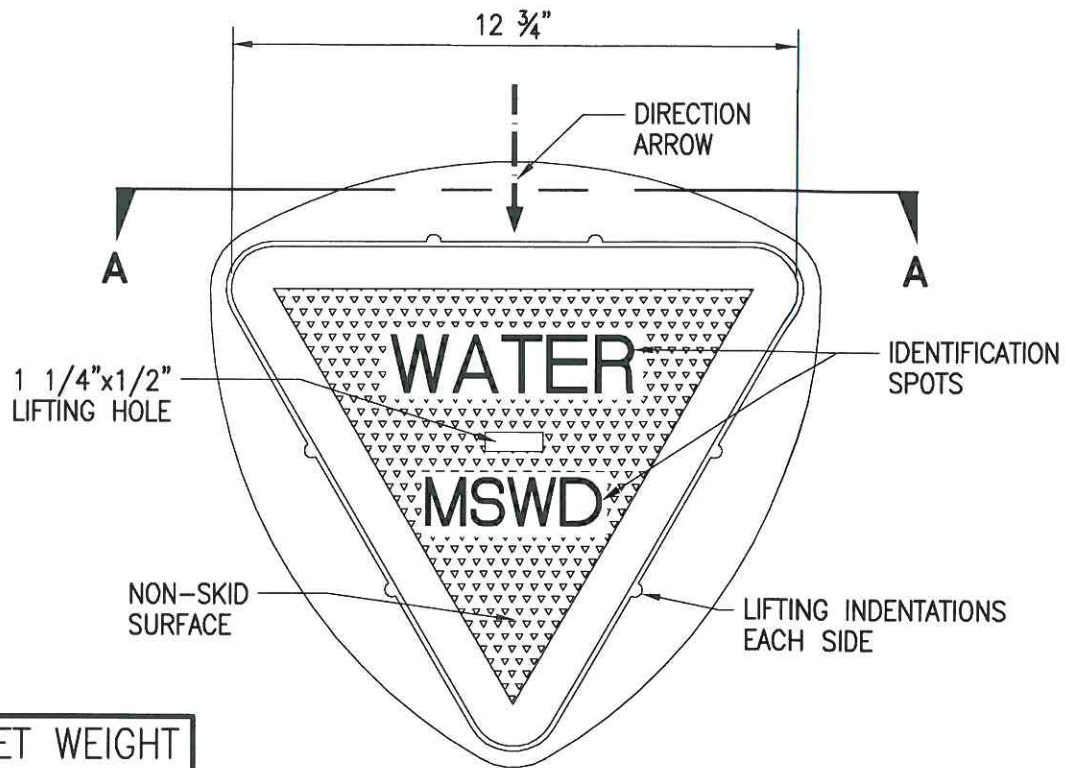
Arden Wallum  
General Manager

Drawn: Hietec Inc. Date: 4/27/12

DRAWING No.

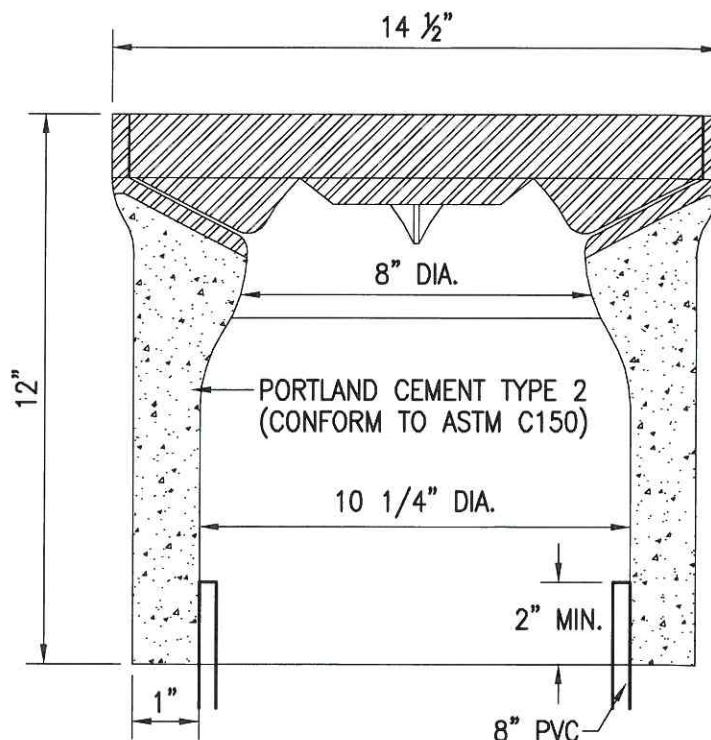
W-02





SET WEIGHT	
FRAME	60 lbs.
LID	15 lbs.
TOTAL	75 lbs.

**PLAN VIEW**



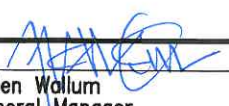
**SECTION A-A**

**NOTES:**

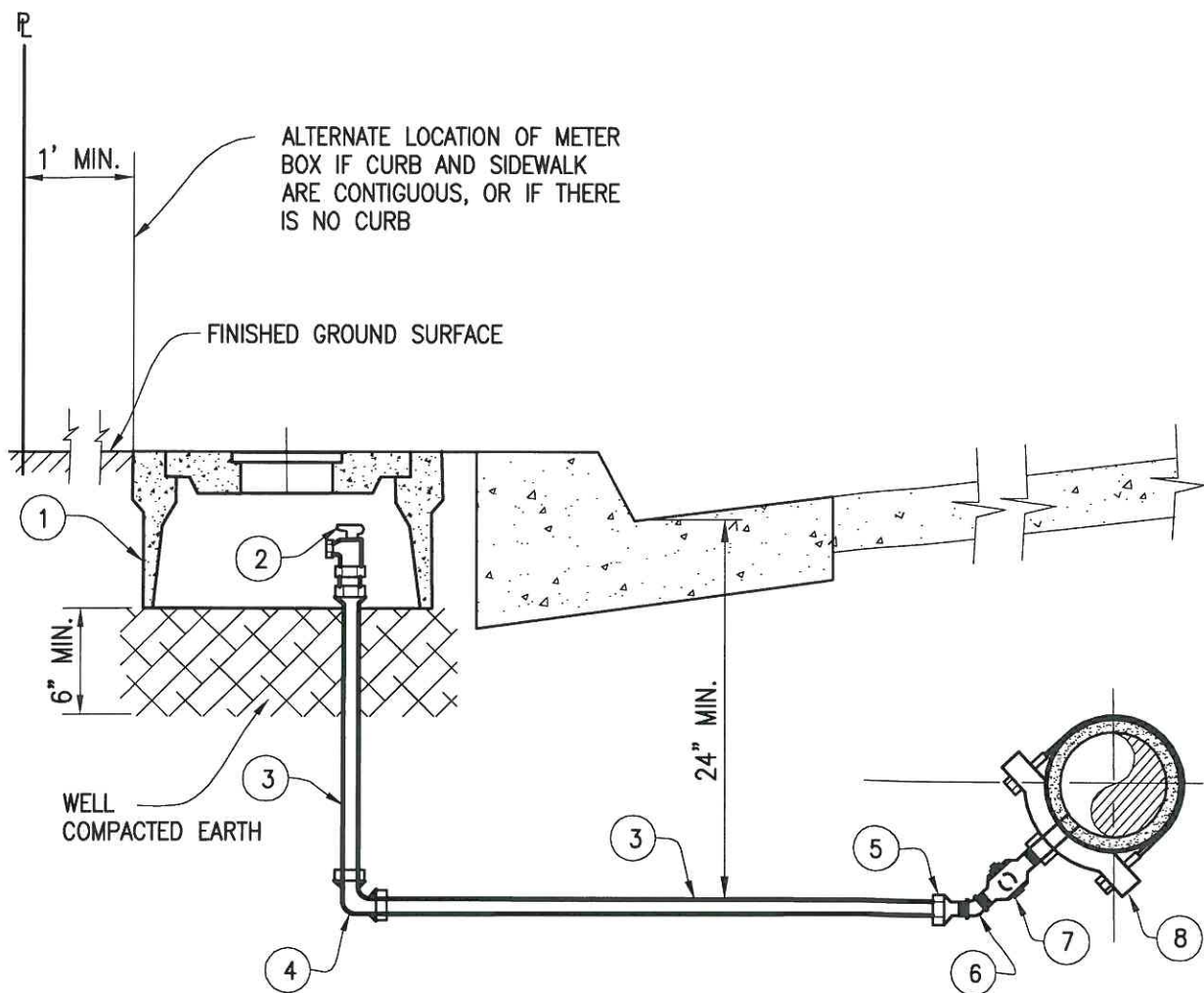
1. ALL METALLIC MATERIALS SHALL BE CAST IRON OR DUCTILE IRON.
2. FRAME AND LID SHALL HAVE CAST SEAT AND SIDE TO ASSURE CLOSE FIT.
3. CASTING SHALL BE DIPPED IN BLACK BITUMINOUS PAINT.
4. FOR INSTALLATION, SEE STANDARD DRAWING W-02.
5. FRAME AND LID SHALL EXCEED H-20 WHEEL LOADING.
6. SEE APPROVED MATERIALS LIST G-04.



TRIANGULAR WATER VALVE  
CAP AND FRAME

Approved:   
Arden Wallum  
General Manager  
Drawn: Heitec Inc. Date: 6/24/11  
DRAWING No.  
W-02A





ITEM	No. Req'D.	DESCRIPTION	Matl. List#
①	1	CONCRETE METER BOX WITH CONCRETE COVER & CONCRETE READING LID	G-02
②	1	2" BALL ANGLE METER STOP	C-06
③	VARIABLE	2" x REQUIRED LENGTH TYPE "K" SOFT TEMPER COPPER	A-04
④	1	2" CTS COMPRESSION 90° ELBOW	M-06
⑤	1	2" STRAIGHT COUPLING—CTS O.D. x M.I.P.	M-02
⑥	1	2" BRASS FIPT 45° ELBOW	E-04
⑦	1	2" BALL CORP STOP, I.P.T. INLET AND OUTLET	C-02
⑧	1	2" x MAIN SIZE DOUBLE STRAP BRONZE SERVICE SADDLE	L-01

NOTE:

PIPE THREADS SHALL BE CLEAN AND SHARP AND SEALED WITH AN APPROVED JOINT COMPOUND.



2" DIAMETER BLOW-OFF  
ASSEMBLY  
INSTALLATION

Approved:

Arden Wallum  
General Manager

Drawn: Heitec Inc. Date: 6/24/11

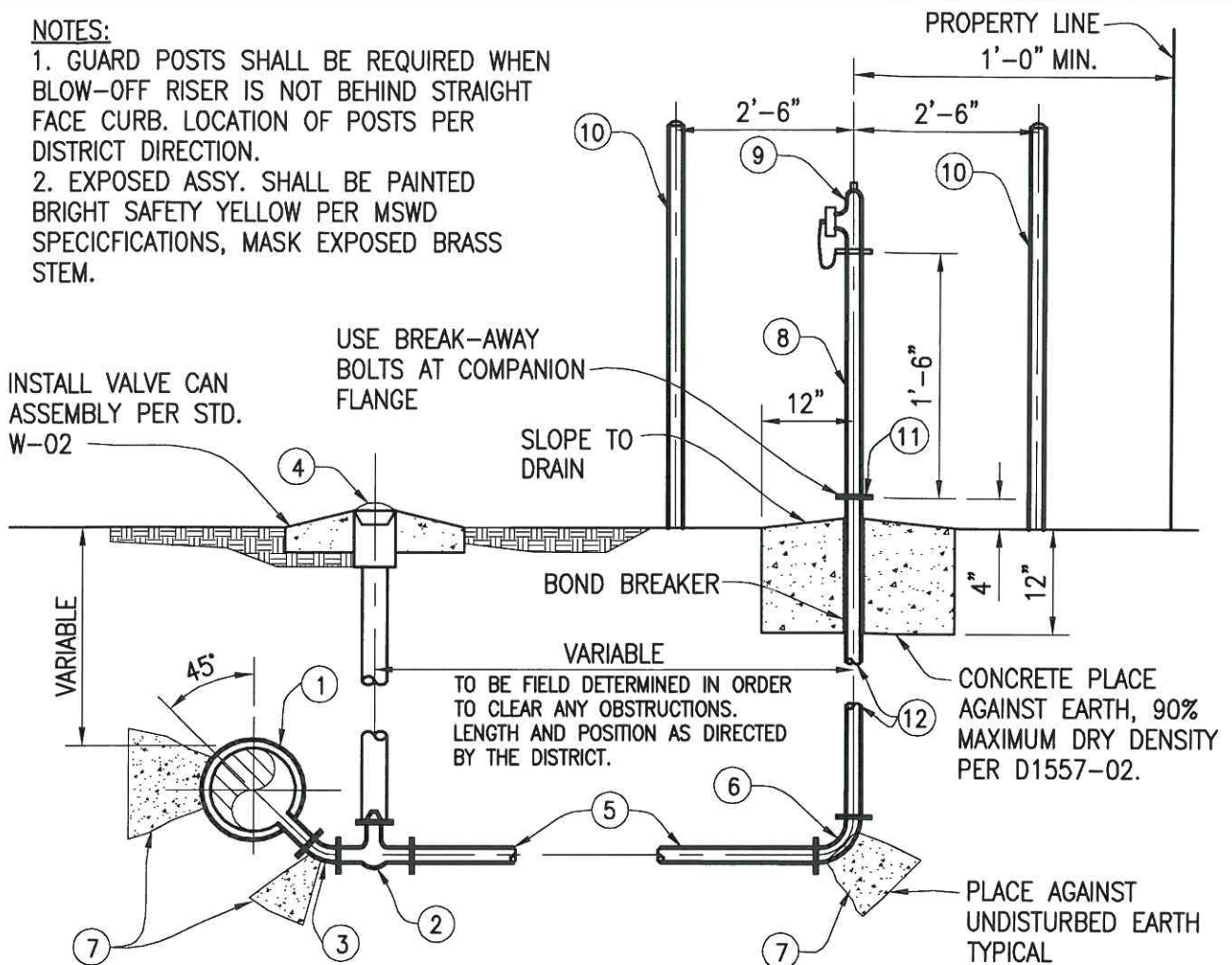
DRAWING No.

W-03



**NOTES:**

1. GUARD POSTS SHALL BE REQUIRED WHEN BLOW-OFF RISER IS NOT BEHIND STRAIGHT FACE CURB. LOCATION OF POSTS PER DISTRICT DIRECTION.
2. EXPOSED ASSY. SHALL BE PAINTED BRIGHT SAFETY YELLOW PER MSWD SPECIFICATIONS, MASK EXPOSED BRASS STEM.



ITEM	No. Req'd.	DESCRIPTION	Matl. List#
①	1	MAIN SIZE x 4" FLANGED D.I. REDUCING TEE	E-03
②	1	4" DIA. FLANGED GATE VALVE	B-01
③	1	4" DIA. FLANGED D.I. 45° ELBOW	E-03
④	1	STANDARD VALVE BOX ASSEMBLY PER DWG. W-02	N/A
⑤	VARIES	4" DIA. D.I. PIPE FLANGED OR RESTRAINED JOINTS.	A-03
⑥	1	4" DIA. D.I. 90° ELBOW.	E-03
⑦	2	CONCRETE THRUST BLOCK PER STD. W-08, W-08A, & W-08B	N/A
⑧	1	4" DIA. x 1'-6" LONG BLK STD PIPE, NPT	A-07
⑨	1	BRONZE 4"x2 1/2" ANGLE FIRE PLUG VALVE	H-03
⑩	2	GUARD POST INSTALLATION PER STD. G-06	N/A
⑪	1	4" NPT COMPANION FLANGE	D-03
⑫	VARIES	4" FLANGED DUCTILE IRON SPOOL	E-03



**4" DIAMETER BLOW-OFF  
INSTALLATION**

Approved:

Arden Wallum  
General Manager

Drawn: Heitec Inc. Date: 5/7/12

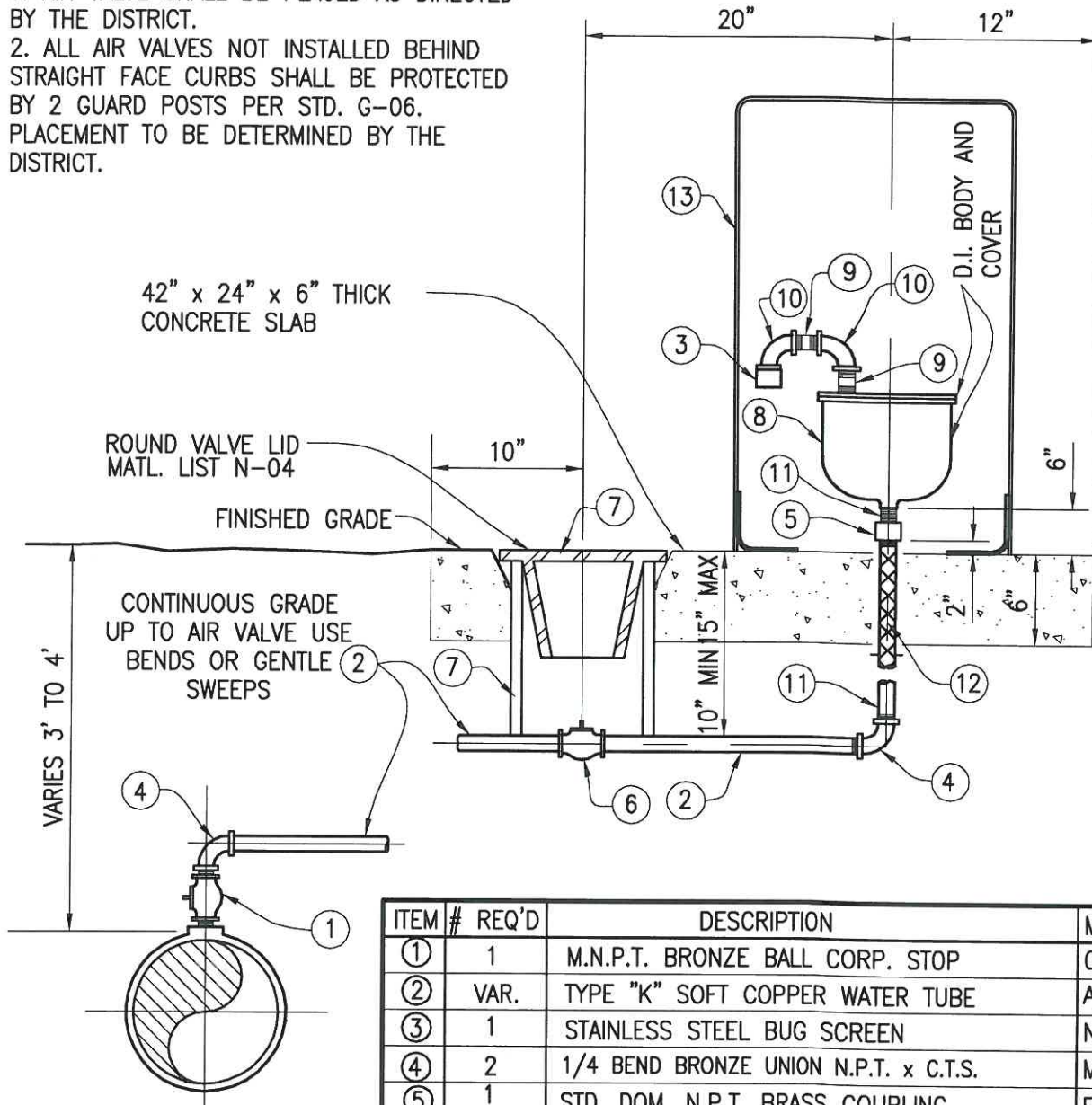
DRAWING No.

W-04



**NOTE:**

1. AIR VALVE SHALL BE PLACED AS DIRECTED BY THE DISTRICT.
2. ALL AIR VALVES NOT INSTALLED BEHIND STRAIGHT FACE CURBS SHALL BE PROTECTED BY 2 GUARD POSTS PER STD. G-06. PLACEMENT TO BE DETERMINED BY THE DISTRICT.



**NOTES:**

1. ALL PIPE, FITTINGS, AND VALVES SHALL BE SAME DIA. AS THE AIR VALVE INLET.
2. ALL PIPE THREADS SHALL BE CLEAN AND SHARP AND SEALED WITH AN APPROVED JOINT COMPOUND.

ITEM #	REQ'D	DESCRIPTION	MTL. #
①	1	M.N.P.T. BRONZE BALL CORP. STOP	C-01
②	VAR.	TYPE "K" SOFT COPPER WATER TUBE	A-04
③	1	STAINLESS STEEL BUG SCREEN	N-15
④	2	1/4 BEND BRONZE UNION N.P.T. x C.T.S.	M-07
⑤	1	STD. DOM. N.P.T. BRASS COUPLING	E-04
⑥	1	COMP. BRONZE BALL CURB VALVE W/TEE HEAD	C-03
⑦	1	8" CIRC. VALVE BOX	N-05
⑧	1	HEAVY DUTY D.I. COMB. AIR RELEASE VALVE	B-03
⑨	2	3" LONG STD. BLK. N.P.T. NIPPLE	A-07
⑩	2	STD. BLK. 90° ELBOW	E-06
⑪	2	STD. DOM. BRASS PIPE NIPPLE N.P.T.	A-05
⑫	1	PIPE WRAP	N-10
⑬	1	AIR VALVE ENCLOSURE	N-14



**AIR VALVE INSTALLATION**  
1" OR 2" DIA.

Approved:

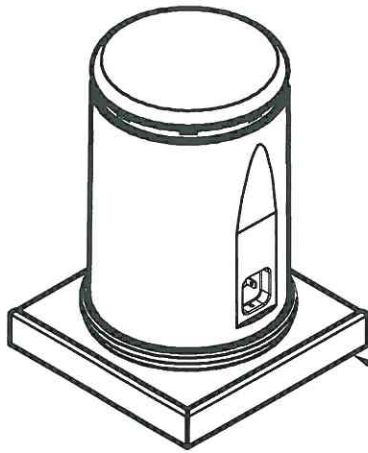
Arden Wallum  
General Manager

Drawn: Heitec Inc. Date: 4/27/12

DRAWING No.

W-05

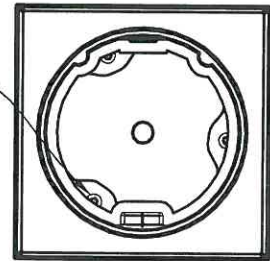




18" DIA. x 30" TALL VALVE ENCLOSURE. ENCLOSURE TO HAVE A BOLT DOWN BASE WITH REMOVABLE COVER. COVER & BASE TO BE MANUFACTURED FROM 3/16" WALL POLYETHYLENE WITH UV STABILIZERS. COVER SHALL LOCK TO BASE WITH AN INTEGRAL AUTO-LATCH AND PADLOCK HASP. MSWD TO PROVIDE PADLOCK.

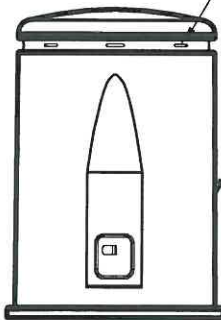
CONCRETE PAD

3 - 1/2" CONCRETE ANCHORS WITH STAINLESS FENDER WASHERS



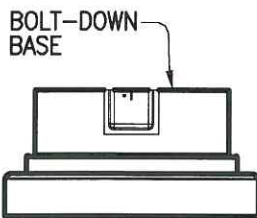
TOP VIEW

8 - 1/4" x 1 3/4" VENT SLOTS



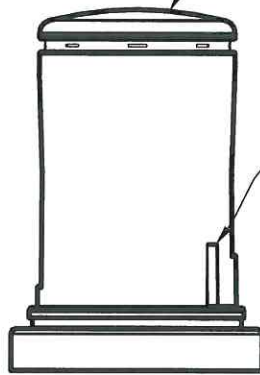
VALVE COVER  
MTL. LIST N-14

DOMED TOP



BOLT-DOWN  
BASE

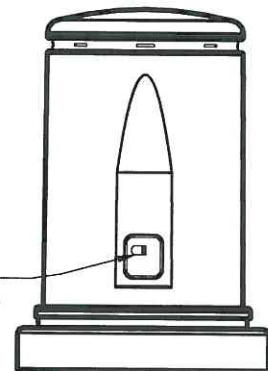
FRONT VIEW  
(OPENED)



SIDE VIEW

COVER  
ALIGNMENT  
TABS

STAINLESS STEEL  
PADLOCK BACKING  
PLATE



FRONT VIEW

NOTE: COLOR SHALL BE TAN PER MSWD SPECIFICATIONS.



1" OR 2" POLYETHYLENE  
AIR VALVE ENCLOSURE

Approved:

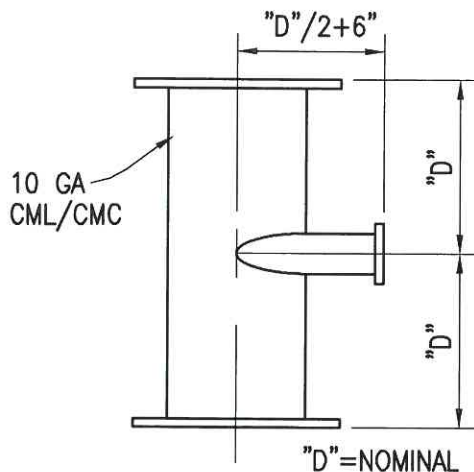
Arden Wallum  
General Manager

Drawn: Heitec Inc. Date: 4/27/12

DRAWING No.

W-05A

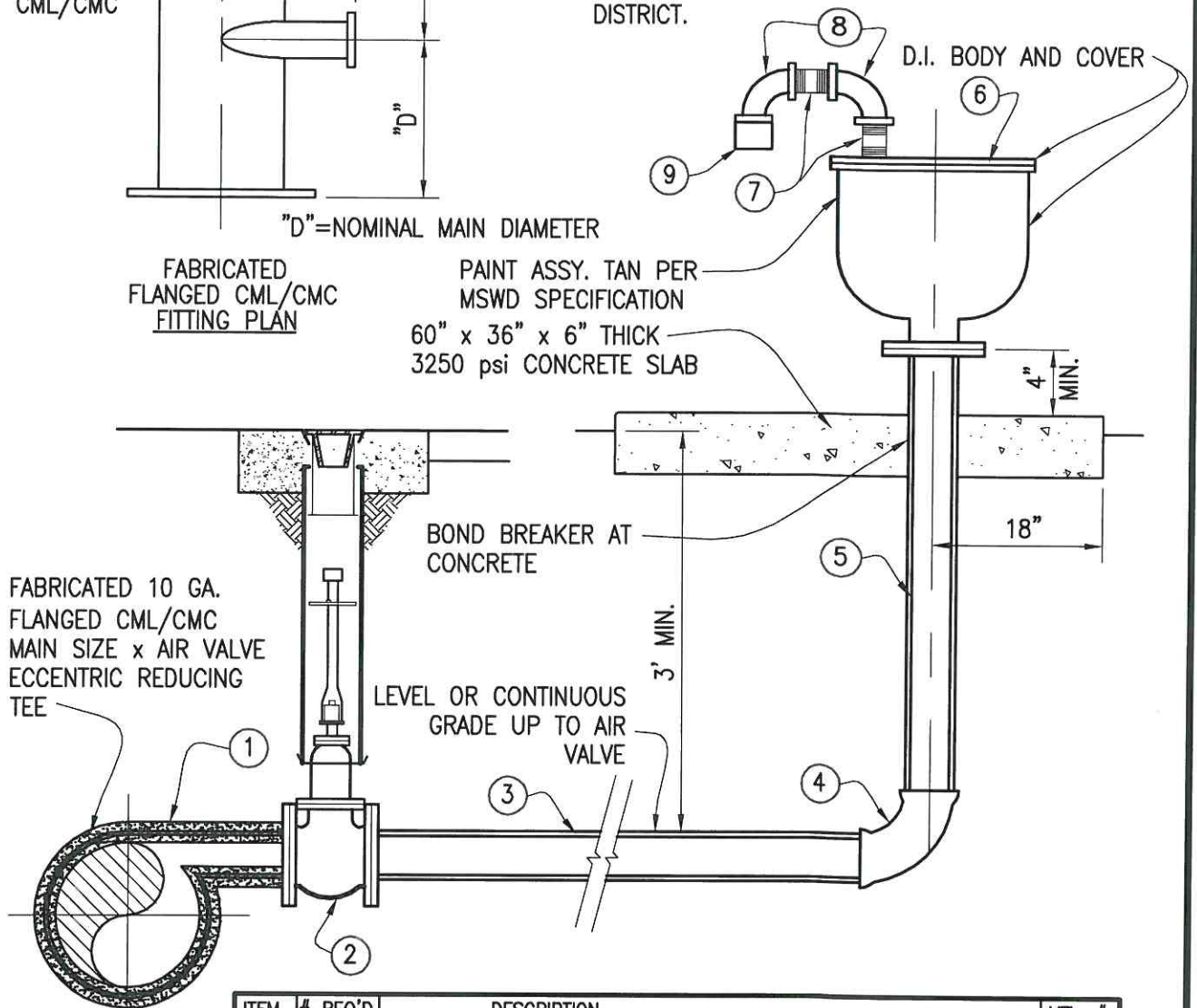




FABRICATED  
FLANGED CML/CMC  
FITTING PLAN

PAINT ASSY. TAN PER  
MSWD SPECIFICATION

60" x 36" x 6" THICK  
3250 psi CONCRETE SLAB



NOTE:

1. AIR VALVE SHALL BE PLACED AS DIRECTED  
BY THE DISTRICT.

2. ALL AIR VALVES NOT INSTALLED BEHIND  
STRAIGHT FACE CURBS SHALL BE PROTECTED  
BY 2 GUARD POSTS PER STD. G-06.  
PLACEMENT TO BE DETERMINED BY THE  
DISTRICT.

ITEM	# REQ'D	DESCRIPTION	MTL. #
①	1	MAIN SIZE x AIR VALVE SIZE FABRICATED 10 GA. CML/CMC FLANGED ECCENTRIC REDUCING TEE	E-01
②	1	AIR VALVE SIZE FLANGED GATE VALVE ASSEMBLY PER STD. DWG. W-02	B-02
③	VARIES	AIR VALVE SIZE CLASS 350 DUCTILE IRON PIPE	A-03
④	1	AIR VALVE SIZE DUCTILE IRON 90° BEND, RESTRAINED JOINTS	E-03
⑤	1	AIR VALVE SIZE DUCTILE IRON FLANGED SPOOL	A-03
⑥	1	HEAVY DUTY D.I. COMB. AIR RELEASE VALVE, SIZE PER PLAN	B-03
⑦	2	AIR VALVE SIZE x 4" LONG STD. BLK. N.P.T. NIPPLE	A-07
⑧	2	AIR VALVE SIZE HEAVY DUTY 90° NPT ELBOW	E-06
⑨	1	STAINLESS STEEL BUG SCREEN	N-15



4" OR LARGER AIR VALVE  
ASSEMBLY

Approved:

Arden Wallum  
General Manager

Drawn: Heitec Inc. Date: 5/1/12

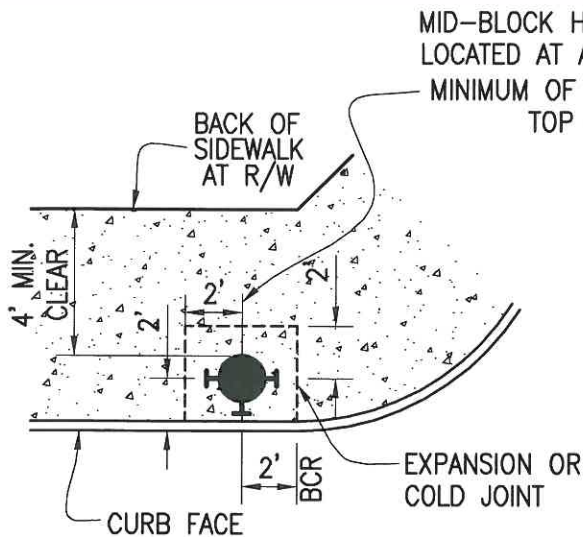
DRAWING No.

W-06

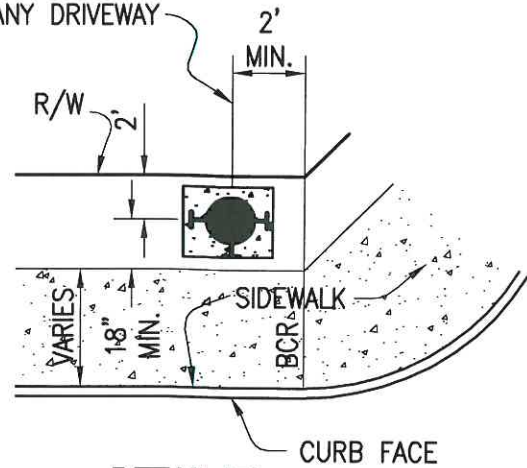




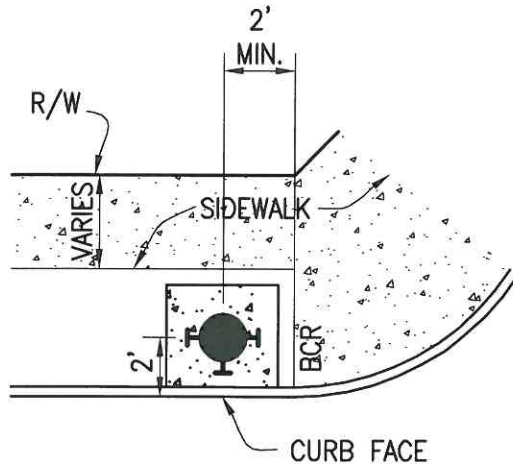




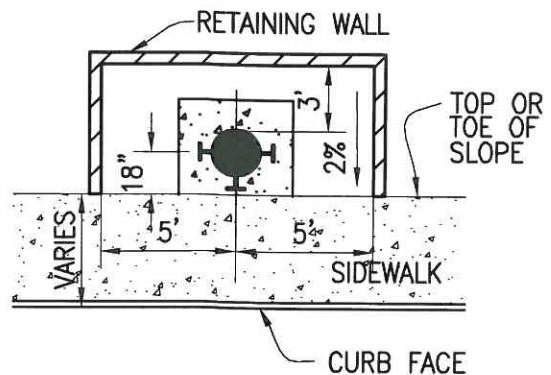
**DETAIL 'A'**  
FULL COMMERCIAL SIDEWALK



**DETAIL 'B'**  
RESIDENTIAL WITH ATTACHED SIDEWALK OR NO SIDEWALK



**DETAIL 'C'**  
PARKWAY WITH DETACHED SIDEWALK



**DETAIL 'D'**  
RETAINING WALL FOR SLOPE ADJACENT TO SIDEWALK

**NOTES:**

1. ALL FIRE HYDRANTS SHALL BE LOCATED WITHIN PUBLIC RIGHT-OF-WAY OR DEDICATED PUBLIC UTILITY EASEMENTS.
2. ALL FIRE HYDRANT LOCATIONS SHALL BE SUBJECT TO FIRE DEPARTMENT AND DISTRICT APPROVAL.
3. ALL HYDRANTS SHALL HAVE A 36" SQUARE 3250 PSI SQUARE CONCRETE PAD PER STD. DWG. W-07.
4. BLUE REFLECTIVE MARKER SHALL BE PLACED 8" FROM CENTERLINE OF STREET OR DRIVE LANE AT EVERY FIRE HYDRANT PER MSWD AND FIRE DEPARTMENT SPECIFICATIONS.



**FIRE HYDRANT LOCATION**

Approved:

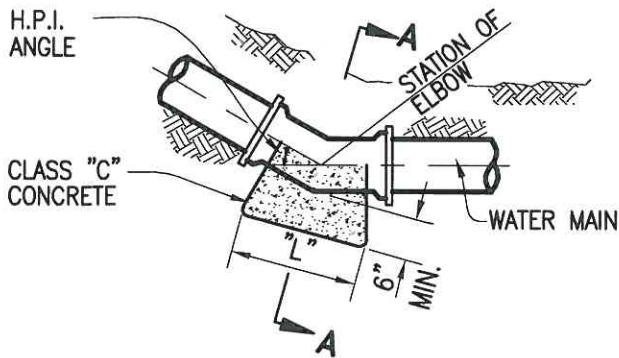
Arden Wallum  
General Manager

Drawn: Heitec Inc. Date: 5/7/12

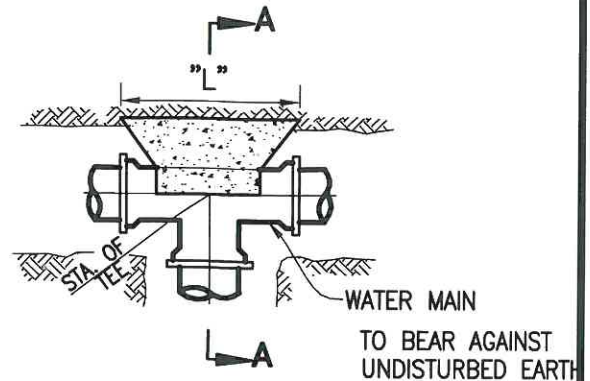
DRAWING No.

W-07A

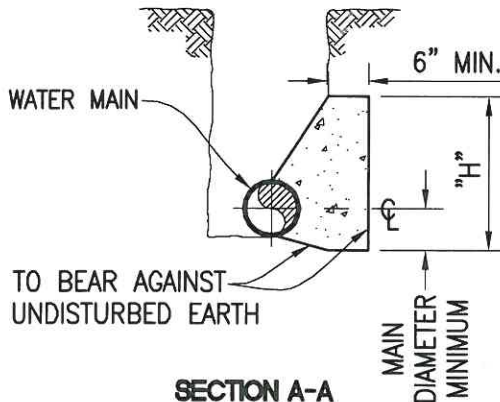




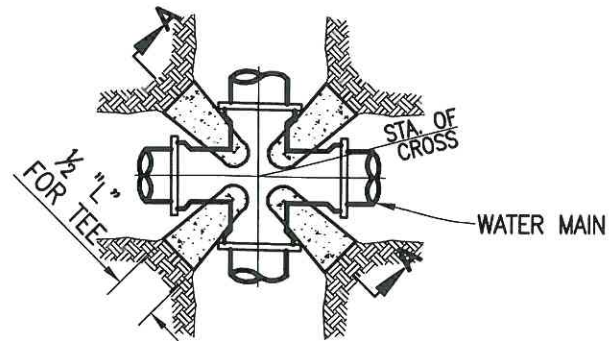
PLAN VIEW BEND



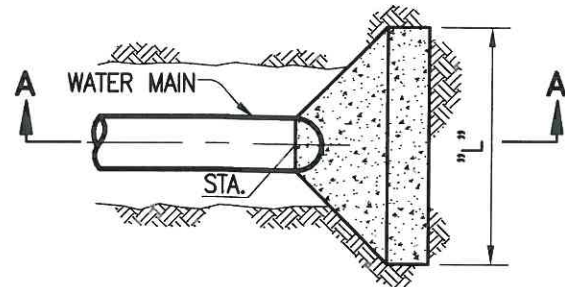
PLAN VIEW TEE



SECTION A-A  
HORIZONTAL THRUST BLOCK



PLAN VIEW CROSS



PLAN VIEW END

**NOTES:**

1. CONCRETE SHALL BE CLASS C 3250 PSI
2. TOTAL BEARING AREA, "A", SHALL BE BASED ON SOILS CONDITIONS AND MAIN SIZE FROM STD. DWG. W-8B.
3. "H" DIMENSION SHALL NORMALLY BE BETWEEN 3 AND 4 MAIN DIAMETERS.
4. "L" DIMENSION SHALL BE AS REQUIRED TO SATISFY THE EQUATION  $"L" \times "H" = "A"$ .

**SAMPLE CALCULATION**

FOR 8" TEE OR END WITH SOILS PRESSURE OF 1500 LBS/SF  
FROM CHART REQUIRED "A"=12 S.F.

USE "H"=3 DIA.=2' THEN  $"L" = "A" / "H" = 12 / 2 = 6'$

OR USE "H"= 4 DIA.=2.67' THEN  $"L" = "A" / "H" = 12 / 2.67 = 4.5'$

"L" AND "H" MAY BE VARIED TO MEET FIELD CONDITIONS SO LONG AS  $"L" \times "H" = "A"$



HORIZONTAL  
THRUST BLOCKS

Approved:

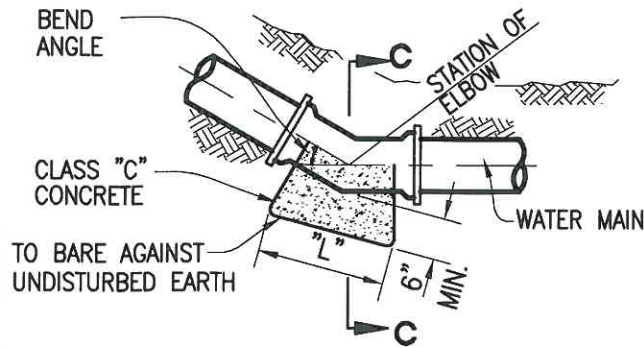
Arden Wallum  
General Manager

Drawn: Heitec Inc. Date: 4/27/12

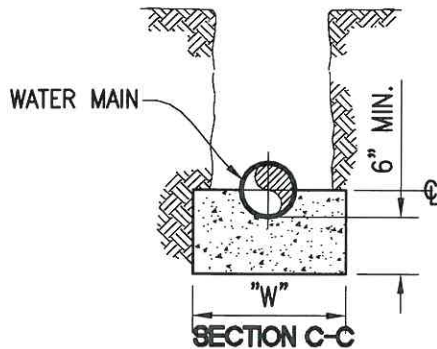
DRAWING No.

W-08





**SECTIONAL ELEVATION**



**SECTION C-C**

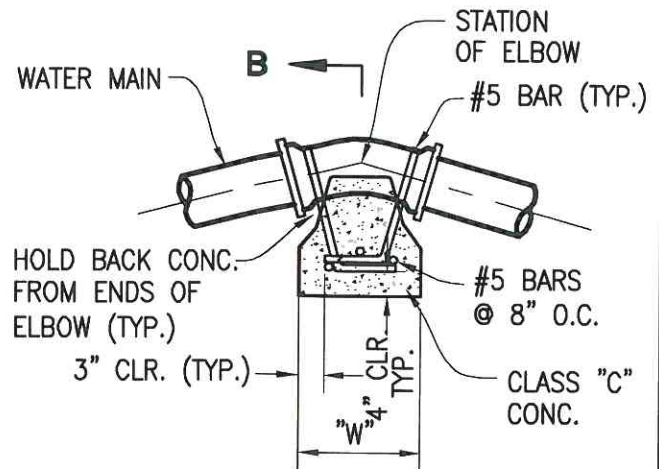
**VERTICAL BEARER BLOCK**

**NOTES:**

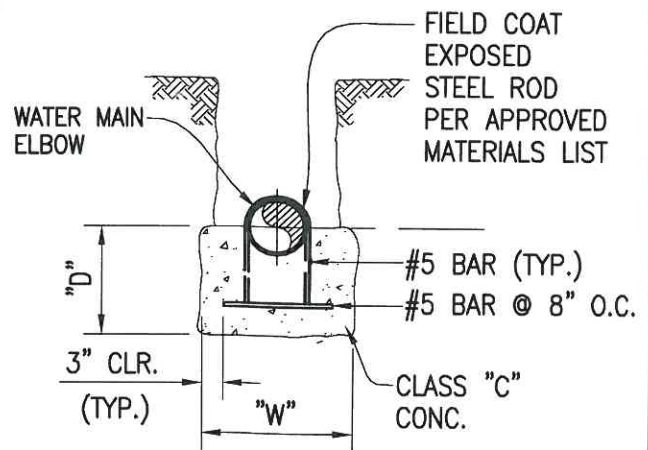
1. CONCRETE SHALL BE CLASS C 3250 PSI
2. TOTAL BEARING AREA, "A", SHALL BE BASED ON SOILS CONDITIONS AND MAIN SIZE FROM STD. DWG. W-8B.
3. "H" DIMENSION SHALL NORMALLY BE BETWEEN 3 AND 4 MAIN DIAMETERS.
4. "L" DIMENSION SHALL BE AS REQUIRED TO SATISFY THE EQUATION  $"L" \times "H" = "A"$ .

**SAMPLE CALCULATION**

FOR 8" 45° BEND WITH SOILS PRESSURE OF 1500 LBS/SF  
 FROM CHART REQUIRED  $"A" = 12 \times 0.8 = 9.6$  S.F.  
 USE  $"W" = 3'$  THEN  $"L" = "A" / ("W" \times 3') = 3.2'$ .  
 $"L"$  AND  $"W"$  MAY BE VARIED TO MEET FIELD CONDITIONS SO LONG AS  $"L" \times "H" = "A"$



**SECTIONAL ELEVATION**



**SECTION B-B**

**VERTICAL ANCHOR BLOCK**

PIPE DIA.	BEND ANGLE	"W"	"D"
6"	11 1/4°	2'-0"	1'-0"
6"	22 1/2°	2'-0"	1'-3"
6"	45°	2'-0"	2'-6"
8"	11 1/4°	2'-8"	1'-2"
8"	22 1/2°	2'-8"	1'-4"
8"	45°	2'-8"	2'-8"
12"	11 1/4°	4'-0"	1'-2"
12"	22 1/2°	4'-0"	1'-4"
12"	45°	4'-0"	2'-8"
18"	11 1/4°	6'-0"	1'-2"
18"	22 1/2°	6'-0"	1'-4"
18"	45°	6'-0"	2'-8"



VERTICAL  
THRUST BLOCKS

Approved:

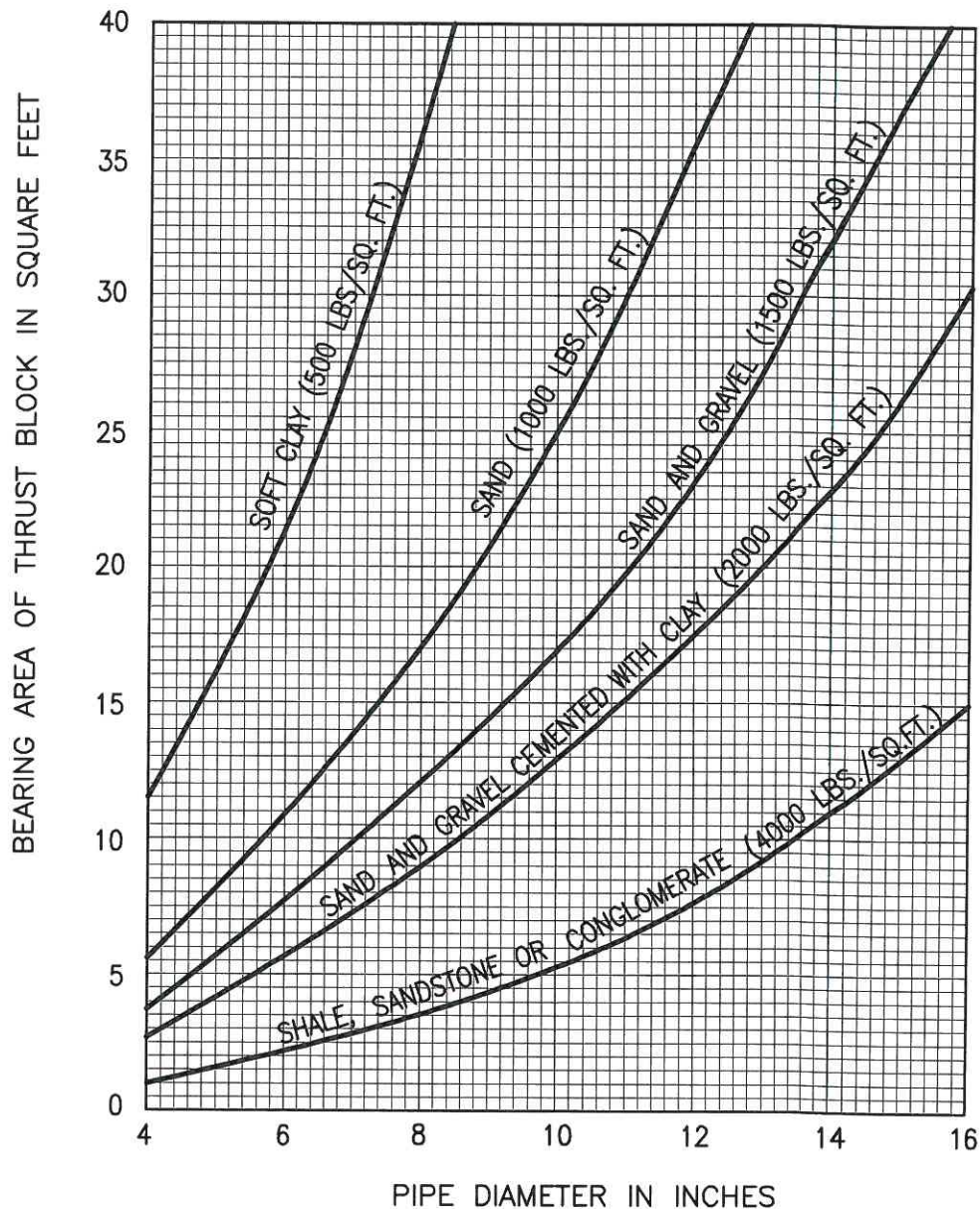
Arden Wallum  
General Manager

Drawn: Heitec Inc. Date: 4/27/12

DRAWING No.

W-08A





NOTES:

1. BASED ON A 225 PSI TEST PRESSURE AND BEARING VALUES OF DRY SOILS.
2. VALUES FROM CURVES ARE FOR TEES AND DEAD ENDS I.E. STRAIGHT LINE THRUST.  
 FOR 90° BENDS: 1.4 x VALUE FROM CURVE  
 FOR 45° BENDS: 0.8 x VALUE FROM CURVE  
 FOR 22 1/2° BENDS: 0.4 x VALUE FROM CURVE
3. FOR CONDITIONS NOT COVERED BY CURVES, THRUST DEVICES MUST BE APPROVED BY THE ENGINEER.
4. FOR LOCATION OF THRUST BLOCKS, SEE STANDARD DRAWING W-8 OR W-08A.
5. CONCRETE THRUST BLOCKS SHALL BE CONSTRUCTED OF CONCRETE PER APPROVED MATERIALS LIST.



THRUST BLOCK BEARING AREAS

Approved:

Arden Wallum  
General Manager

Drawn: Heitec Inc. Date: 01/22/08

DRAWING No.

W-08B



### REQUIRED LENGTH OF RESTRAINED JOINTS

PIPE SIZE	END OR VALVE	90° BEND	45° BEND	22 1/2° BEND	11 1/4° BEND
4"	18'	11'	5'	2'	1'
6"	27'	16'	7'	3'	2'
8"	35'	21'	9'	4'	2'
10"	42'	25'	10'	5'	3'
12"	48'	29'	12'	6'	3'
14"	45'	34'	14'	7'	3'
16"	63'	38'	16'	8'	4'
18"	70'	42'	17'	8'	4'
20"	77'	46'	19'	9'	5'
24"	90'	54'	22'	11'	5'
30"	109'	65'	27'	13'	6'
36"	125'	75'	31'	15'	7'

**NOTES:**

1. THE ABOVE REQUIREMENTS ARE FOR USE IN ADDITION TO REQUIRED THRUST BLOCKS.
2. RESTRAINED JOINTS WILL BE REQUIRED AT ALL FITTINGS, VALVES, AND ANY ADDITIONAL JOINT OCCURRING TO THE FIRST JOINT BEYOND THE LENGTH SPECIFIED IN THE TABLE.
3. THE PIPE LENGTHS SHOWN ARE BASED ON A 100 PSI WORKING PRESSURE. FOR HIGHER PRESSURES, INCREASE THE LENGTH BY THE HIGHER PRESSURE RATIO TO 100.



### RESTRAINED JOINT REQUIREMENTS

Approved: \_\_\_\_\_

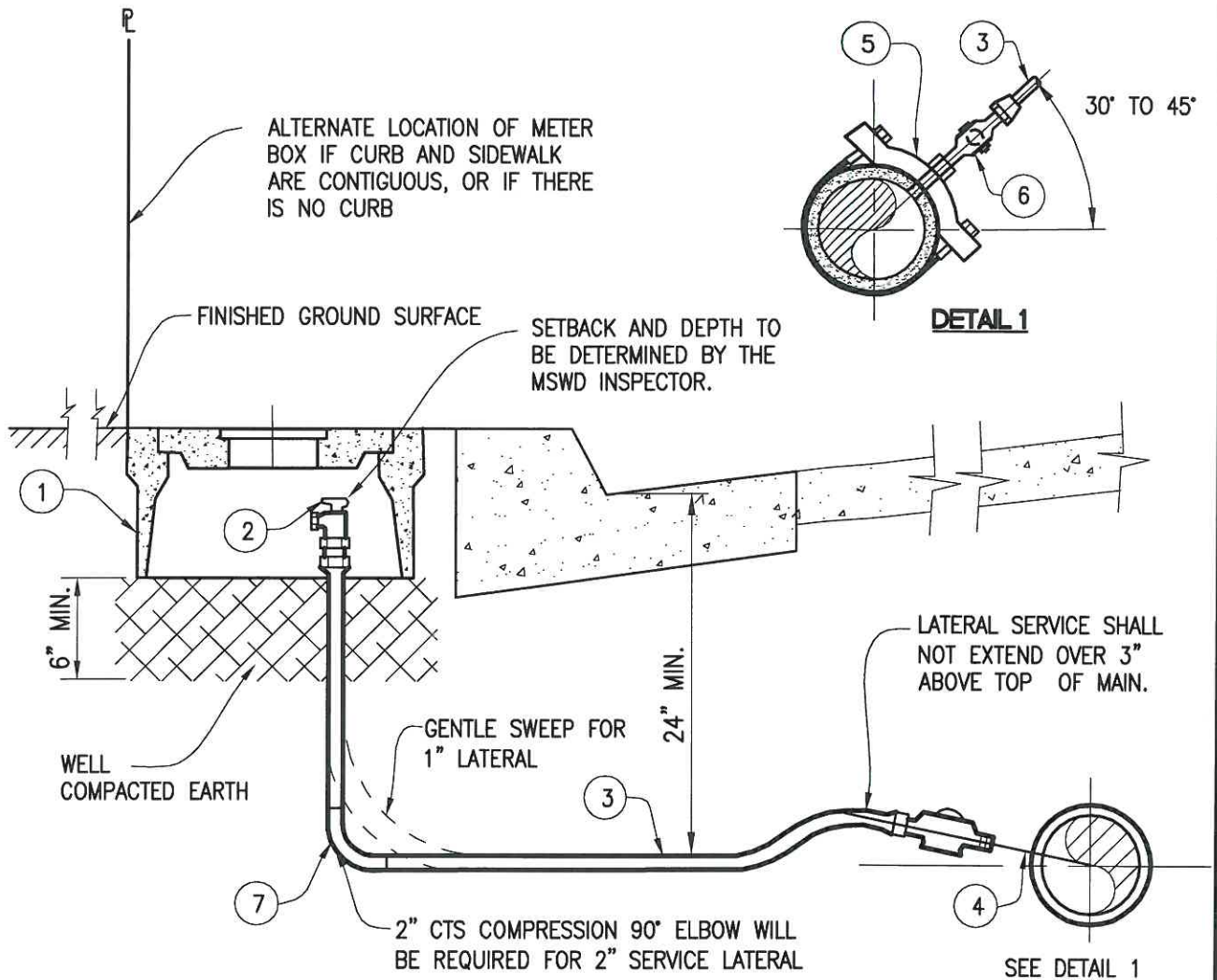
Arden Wallum  
General Manager

Drawn: Heitec Inc. Date: 4/27/12

DRAWING No.

W-08C





ITEM	No. Req'd.	DESCRIPTION	Mtl. #
①	1	CONCRETE METER BOX WITH COVER & CONCRETE READING LID	G-01 G-02
②	1	1" or 2" BALL ANGLE METER STOP	C-05 C-06
③	VARIABLE	1" or 2" x REQUIRED LENGTH TYPE "K" SOFT TEMPER COPPER	A-04
④	1	1" or 2" SERVICE CONNECTION. SEE DETAIL 1	N/A
⑤	1	BRONZE SERVICE SADDLE	L-01
⑥	1	1" OR 2" BALL CORP STOP, M.N.P.T. INLET x CTS OUTLET	C-01 C-02
⑦	1	2" CTS COMPRESSION ELBOW REQUIRED FOR 2" SERVICE	M-01

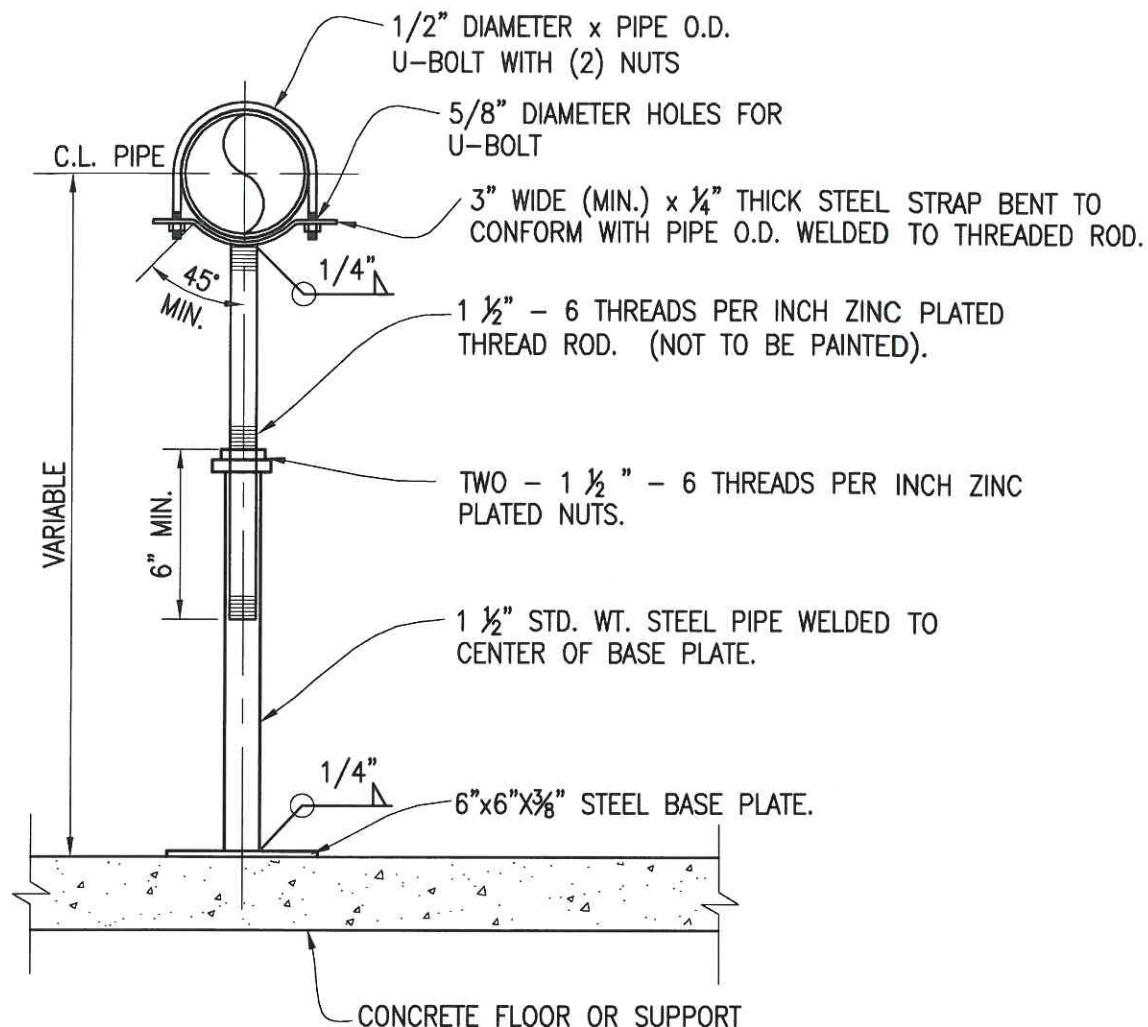
NOTE:  
PIPE THREADS SHALL BE CLEAN AND SHARP AND SEALED WITH AN APPROVED JOINT COMPOUND.



1" AND 2" DIAMETER  
SERVICE LATERAL  
INSTALLATION

Approved: *[Signature]*  
Arden Wallum  
General Manager  
Drawn: Heitec Inc. Date: 6/24/11  
DRAWING No.  
W-09





NOTE:

1. 3"x1/4" STEEL STRAP SHALL BE FORMED TO HAVE FULL & UNIFORM CONTACT FOR ENTIRE LENGTH.
2. PAINT IN ACCORDANCE WITH SPECIFICATIONS.



PIPE SUPPORT DETAIL

Approved:

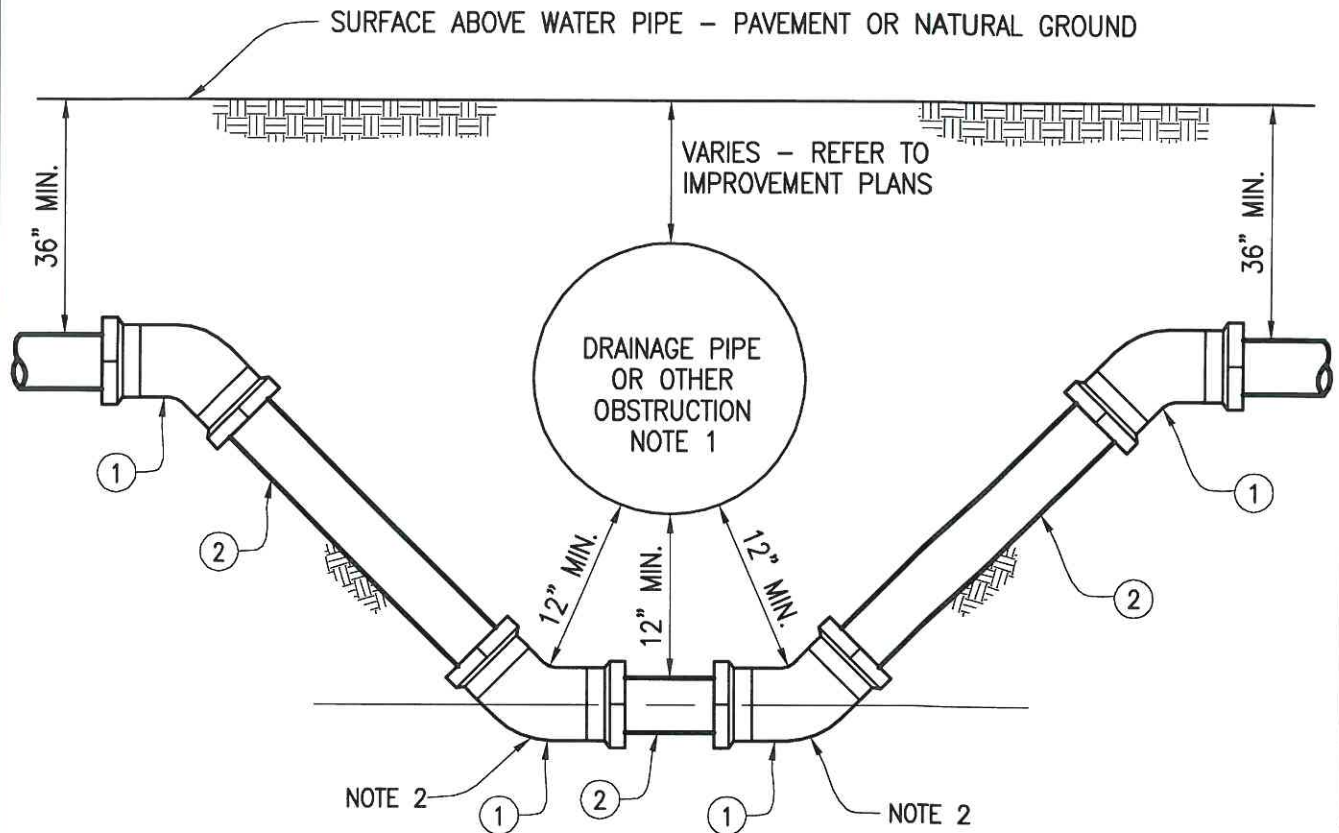
Arden Wallum  
General Manager

Drawn: Heitec Inc. Date: 01/14/08

DRAWING No.

W-10





ITEM	No. Req'D.	SIZE & DESCRIPTION	MTL. LIST NO.
(1)	4	45° ELBOW – PIPE SIZE PER WATER PLAN	E-03
(2)	3	WATER PIPE – SIZE PER PLAN (LENGTH AS REQ'D)	A-03

NOTE:

1. DIMENSIONS AND DESCRIPTION AS SHOWN ON IMPROVEMENT PLANS AND/OR WATER PLANS. ALL FITTINGS SHOULD BE RESTRAINED JOINT M.J./PUSH-ON OR FLANGED.
2. PROVIDE THRUST BLOCKS PER STANDARD DWG NO. W-8 AND W-8A.
3. SPECIAL CROSSING AS SHOWN SHALL BE PROVIDED WHEREVER NOTED ON WATER PLANS OR WHERE CROSSING OVER OBSTRUCTION SHALL RESULT IN LESS THAN 36" MINIMUM COVER OVER WATER MAIN.
4. 2" BLOW-OFF SHALL BE PROVIDED PER STD. DWG. W-03 AT ALL UNDER-CROSSINGS. AIR VALVE WILL BE REQUIRED IF UNDER-CROSSING CAUSES A HIGH POINT IN MAIN.



OBSTRUCTION UNDER  
CROSSING

Approved:

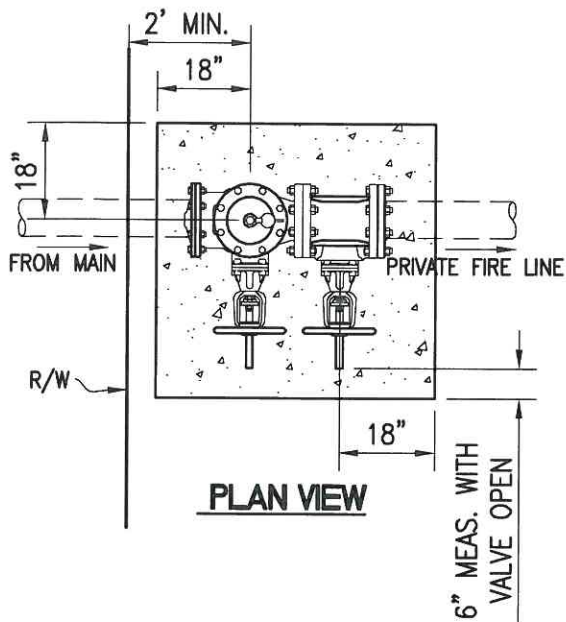
Arden Wallum  
General Manager

Drawn: Heitec Inc. Date: 01/14/08

DRAWING No.

W-11





# **NOTES:**

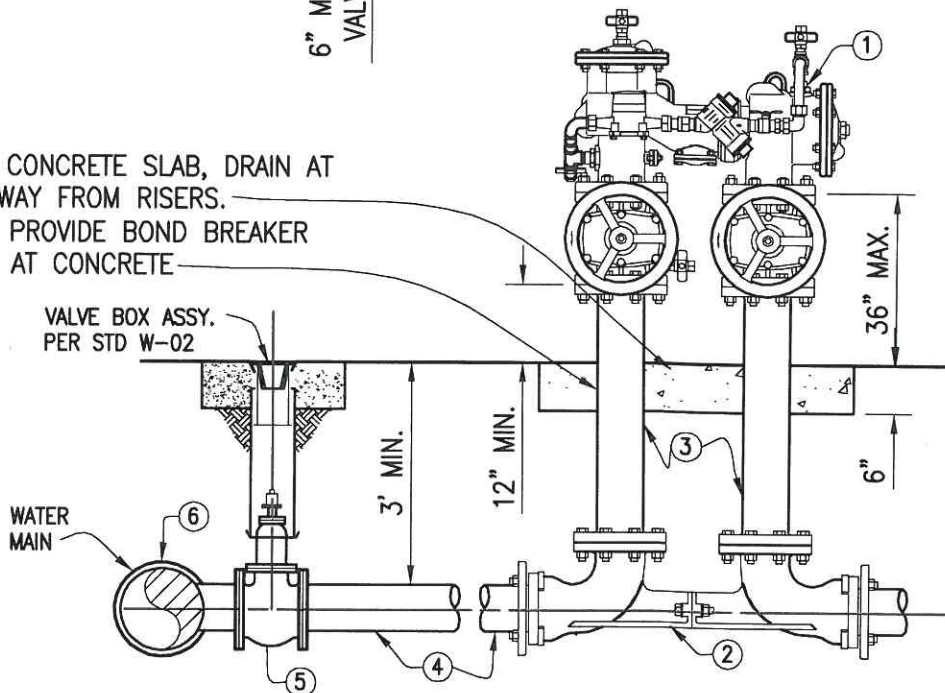
1. DETECTOR CHECK ASSEMBLY SHALL BE LOCATED ON PRIVATE PROPERTY OUTSIDE OF THE PUBLIC RIGHT-OF-WAY.
2. AREA WITHIN 2' OF VALVE ASSEMBLY SHALL BE MAINTAINED CLEAR OF ANY OBSTRUCTIONS TO ALLOW FOR INSPECTION AND MAINTENANCE.
3. DETECTOR CHECK ASSEMBLY BELONGS TO THE PRIVATE PROPERTY OWNER BUT WILL BE TESTED AND MAINTAINED BY THE DISTRICT AT THE OWNER'S EXPENSE.
4. MASK ALL COPPER, BRASS, NAME PLATES, AND METER ASSEMBLY AND PAINT DUCTILE IRON TAN AND VALVE HANDLES BRIGHT RED PER MSWD SPECIFICATIONS.

3250 PSI CONCRETE SLAB, DRAIN AT 2% MIN AWAY FROM RISERS.

PROVIDE BOND BREAKER AT CONCRETE

VALVE BOX ASSY. PER STD W-02

WATER MAIN



## **DETAIL SECTION**

ITEM	No. Req'd.	DESCRIPTION	Matl. List#
①	1	4", 6", 8", OR 10" DOUBLE CHECK DETECTOR VALVE ASSEMBLY INCLUDING O.S.&Y. GATE VALVES	K-03
②	1	D.C.D.A. SIZE & MFR VALVE SETTER ASSEMBLY	K-03
③	2	D.C.D.A. SIZE D.I.P. FLANGED SPOOL, LENGTH AS REQUIRED	A-03
④	VARIES	D.C.D.A. SIZE DUCTILE IRON PIPE, LENGTH AS REQUIRED	A-03
⑤	1	D.C.D.A. SIZE GATE VALVE	B-01
⑥	1	MAIN SIZE x D.C.D.A. SIZE TEE	E-03



4", 6", 8", OR 10" DOUBLE CHECK  
DETECTOR  
VALVE ASSEMBLY  
FOR ABOVE GRADE INSTALLATIONS

Approved:

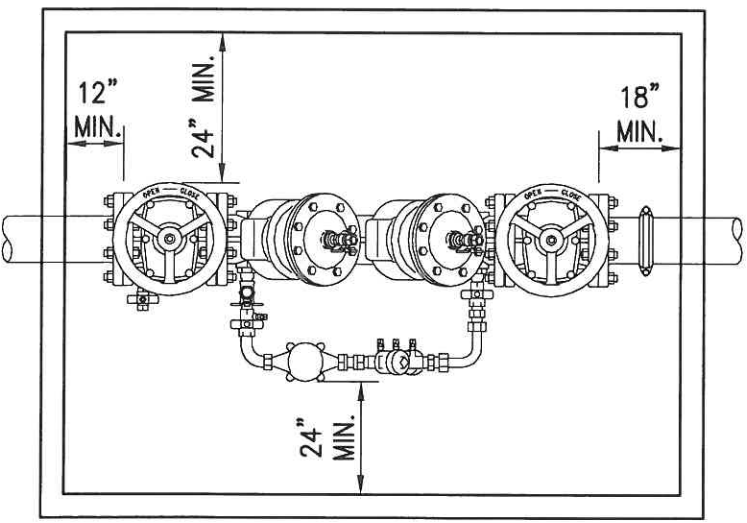
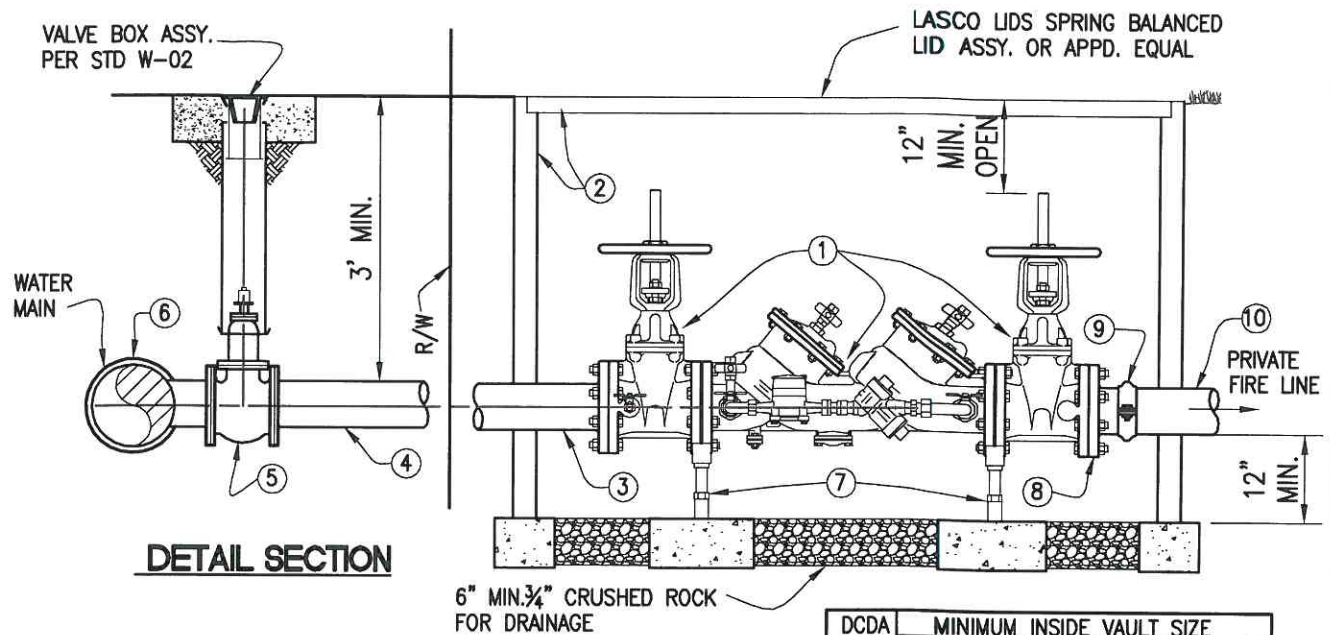
Arden Wallum  
General Manager

Drawn: Heitec Inc. Date: 5/7/12

DRAWING No.

W-12






DCDA SIZE	MINIMUM INSIDE VAULT SIZE		
	LENGTH	WIDTH	DEPTH
4"	6'-2"	5'-2"	4'-2"
6"	7'-0"	5'-4"	4'-10"
8"	7'-9"	5'-6"	5'-6"
10"	8'-5"	5'-8"	6'-5"

- NOTES:
1. DETECTOR CHECK ASSEMBLY SHALL BE LOCATED ON PRIVATE PROPERTY OUTSIDE OF THE PUBLIC RIGHT-OF-WAY.
  2. AREA WITHIN 2' OF VAULT SHALL BE MAINTAINED CLEAR OF ANY OBSTRUCTIONS TO ALLOW FOR INSPECTION AND MAINTENANCE.
  3. DETECTOR CHECK ASSEMBLY BELONGS TO THE PRIVATE PROPERTY OWNER BUT WILL BE TESTED AND MAINTAINED BY THE DISTRICT AT THE OWNERS EXPENSE.

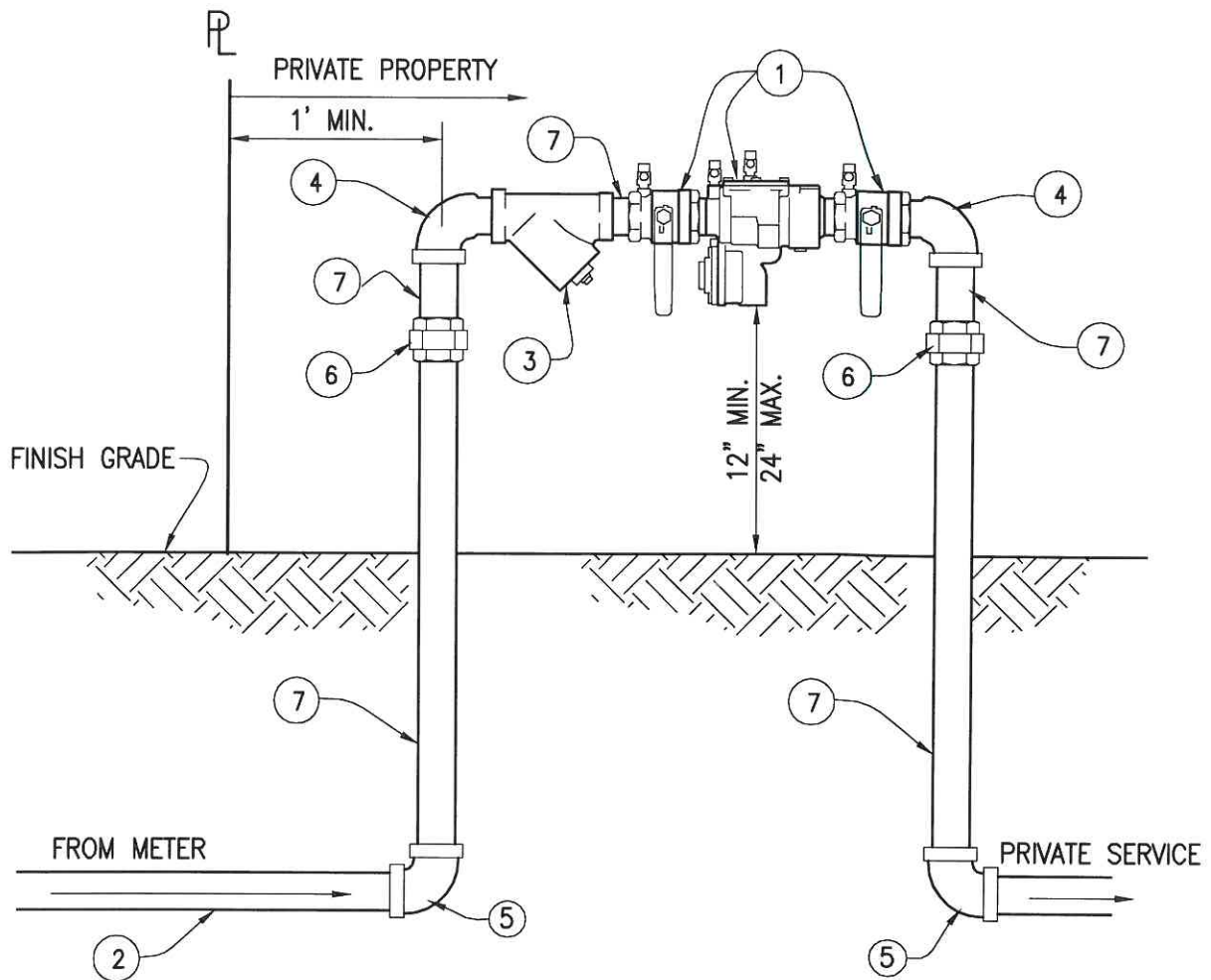
ITEM	No. Req'd.	DESCRIPTION	Matl. List#
①	1	4", 6", 8", OR 10" DOUBLE DETECTOR CHECK VALVE ASSEMBLY INCLUDING O.S.&Y. GATE VALVES	K-03
②	1	PRECAST CONCRETE VAULT AND LID, SIZED PER TABLE	G-05
③	1	D.C.D.A. SIZE D.I.P. FLANGED SPOOL, LENGTH AS REQUIRED	A-03
④	VARIES	D.C.D.A. SIZE IRON PIPE, LENGTH AS REQUIRED	A-03
⑤	1	D.C.D.A. SIZE GATE VALVE	B-01
⑥	1	MAIN SIZE x D.C.D.A. SIZE TEE	E-03
⑦	2	PIPE SUPPORTS PER STD. DWG. W-10, (USE FLANGE O. D.)	A-03
⑧	1	D.C.D.A. SIZE DUCTILE IRON FLANGE x VICTAULIC TYPE GROOVE ADAPTER	A-03
⑨	1	D.C.D.A. SIZE VICTAULIC TYPE COUPLING	N-19
⑩	1	D.C.D.A. SIZE GROOVED DUCTILE IRON SPOOL, 5' MIN. LENGTH	E-03



DOUBLE CHECK DETECTOR  
ASSEMBLY  
UNDERGROUND VAULT  
INSTALLATION

Approved:   
 Arden Wallum  
 General Manager  
 Drawn: Heitec Inc. Date: 01/14/08  
 DRAWING No.  
 W-13





NOTE: ALL PIPE AND FITTINGS TO BE THE SAME SIZE AS THE BACKFLOW PREVENTER ASSEMBLY.

ITEM	# REQ'D	DESCRIPTION	MTL. #
①	1	REDUCED PRESSURE BACKFLOW PREVENTER ASSYSEMBLY	K-02
②	VAR.	BRASS PIPE OR TYPE "K" SOFT COPPER WATER TUBE	A-04
③	1	BRONZE WYE STRAINER	M-08
④	2	STD. WT. DOM. BRASS 90° STREET ELBOW	E-04
⑤	2	STD. WT. DOM. N.P.T. BRASS 90° ELBOW	E-04
⑥	2	STD. WT. DOM. BRASS UNION	E-04
⑦	5	STD. WT. DOM. BRASS PIPE NIPPLE N.P.T. x. VARIES	A-05



$\frac{3}{4}$ ", 1", 1½", OR 2" REDUCED PRESSURE BACKFLOW PREVENTER

Approved:

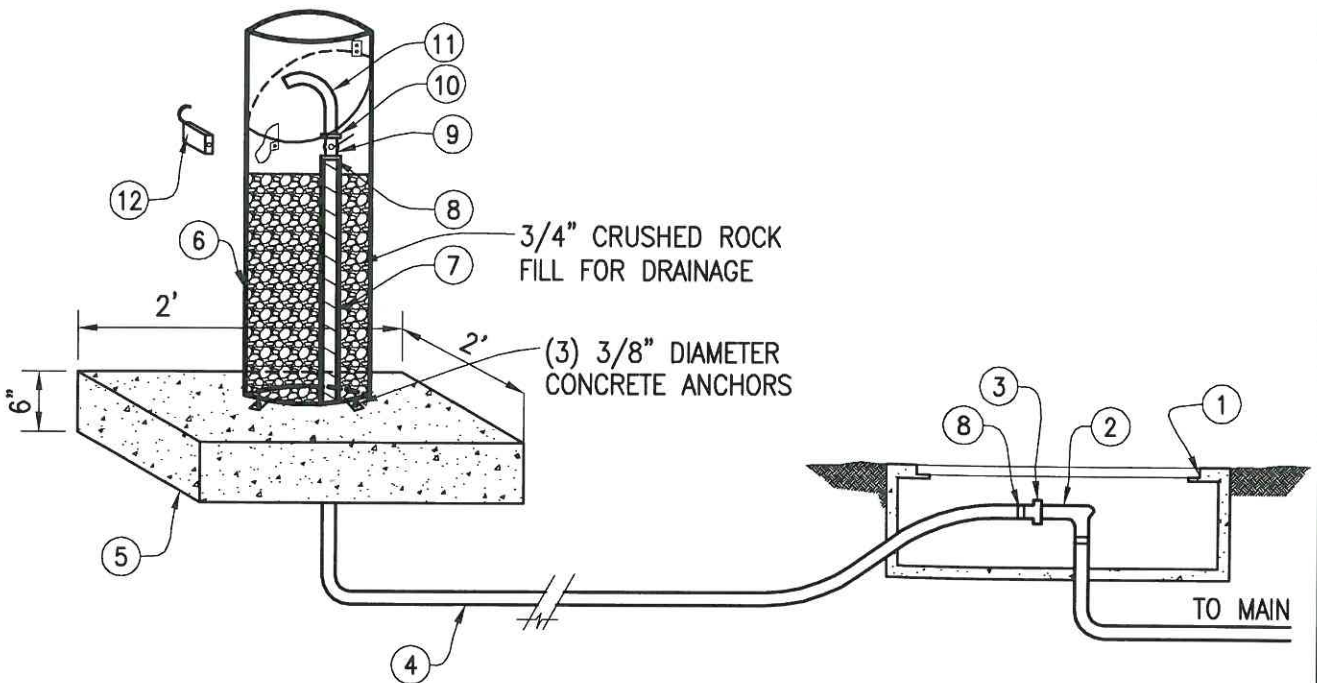
Arden Wallum  
General Manager

Drawn: Heitec Inc. Date: 5/1/12

DRAWING No.

W-14





ITEM	#	REQ'D	DESCRIPTION	MTL. #
①	1		CONCRETE METER BOX	G-01
②	1		1" BALL ANGLE STOP	C-05
③	1		1"x 3/4" BRASS METER ADAPTER	P-04
④	VARIES		3/4" TYPE K COPPER TUBE	A-04
⑤	1		24" x 24" x 6" 3250 PSI CONCRETE PAD	N-02
⑥	1		SAMPLE STATION CANISTER, WTS 858 OR EQUAL	P-02
⑦	VARIES		PLUMBING INSULATION	N-20
⑧	2		3/4" M.P.T. x 3/4" CTS FERRULE FITTING	P-07
⑨	1		3/4" FULL PORT BRASS BALL VALVE	P-03
⑩	1		3/4" M.P.T. x 3/8" CTS FERRULE FITTING	P-01
⑪	1		3/8" COPPER GOOSE NECK	A-04
⑫	1		MASTER PADLOCK SUPPLIED BY MSWD	N/A



# BACTERIOLOGICAL SAMPLE STATION DETAIL

Approved:

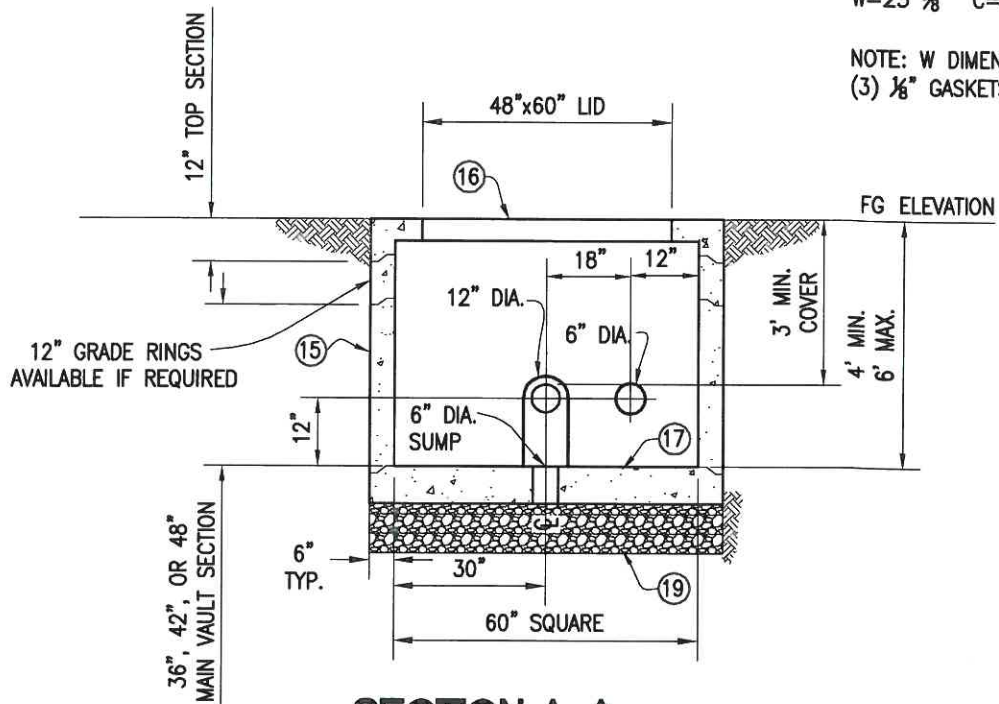
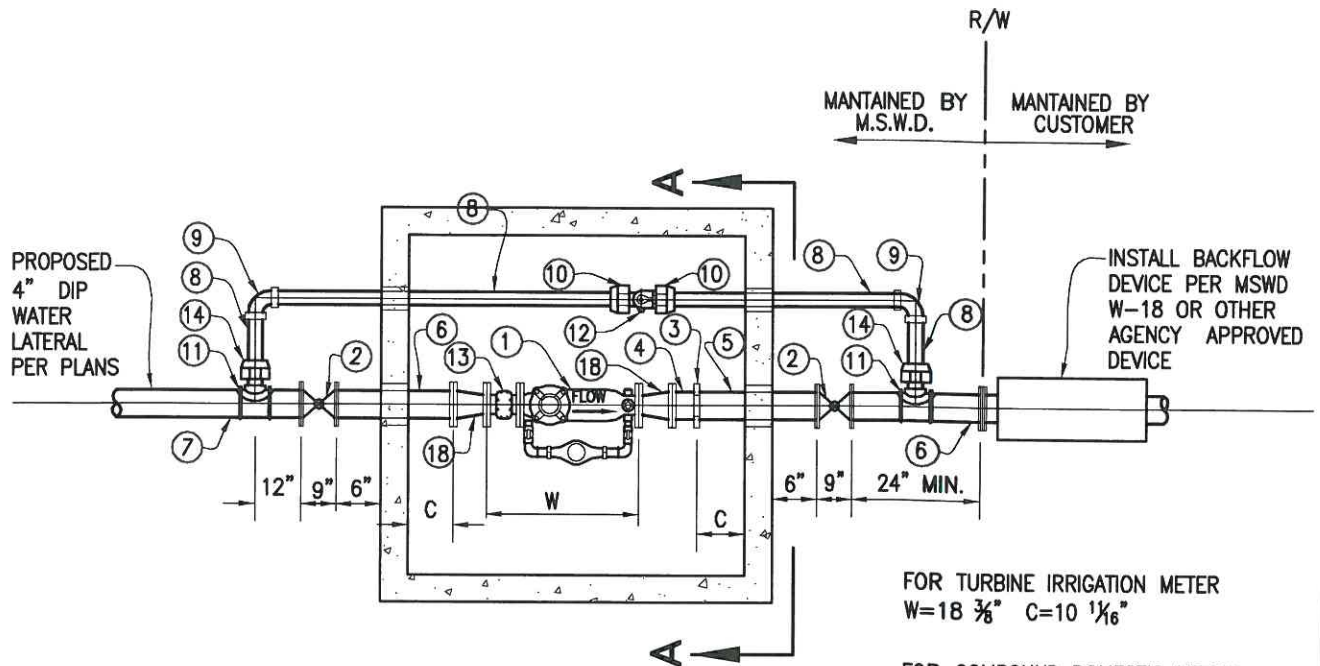
Arden Wallum  
General Manager

Drawn: Heitec Inc. Date: 5/1/12

DRAWING No.

W-15





**SECTION A-A**

SEE W-16A FOR NOTES AND MATERIAL LIST



MSWD VAULT DETAIL  
3" WATER METER INSTALLATION

Approved:

Arden Wallum  
General Manager

Drawn: Heitec Inc. 6/22/11

DRAWING No.

W-16



MATERIAL LIST			
ITEM	QTY.	DESCRIPTION	MATL. LIST #
①	1	METER PER PLANS FURNISHED BY MSWD	
②	2	4" RESILIENT SEAT FLANGED GATE VALVE	
③	1	4" STYLE 77 VICTAULIC COUPLING	
④	1	4" DIP FLG. x VICTAULIC SPOOL x 6" LONG	
⑤	1	4" DIP FLG X VICTAULIC SPOOL (LENGTH VARIES)	
⑥	2	4" FLANGED DIP SPOOL (LENGTH VARIES)	
⑦	LF	4" DIP PIPE (FLANGED END)	
⑧	15±	2" COPPER TUBING TYPE K	
⑨	2	2" x 90° BRONZE CTS COMPRESSION	
⑩	2	2" BRONZE CTS COMPRESSION x 2" MALE IRON PIPE THREAD (MIPT) ADAPT.	
⑪	2	4" x 2" BRONZE DOUBLE STRAP SERVICE SADDLE PER MSWD W-09	
⑫	1	2" BRASS CURB BALL STOP - FIPTxFIPT	
⑬	1	WATER METER STRAINER FURNISHED BY MSWD	
⑭	2	2" MIPT x 2" CTS COMPRESSION BALL CORP. STOP	
⑮	1	60"x 60" ID UTILITY BOX/VAULT	
⑯	1	TORSION SPRING 2-PC LID: PARKWAY OR TRAFFIC COVER (ALUMINUM). ROADWAY APPLIC. TO MEET AASHTO H-20 DIRECT TRAFFIC RATING (STEEL)	
⑰	1	PRECAST CONCRETE BASE W/6" SUMP	
⑱	2	4" x 3" ECCENTRIC DIP FLANGED REDUCER	
⑲	36 CF	12" THICK 3/4" CRUSHED ROCK BASE	

### NOTES:

1. PROVIDE METER SUPPORT AS REQUIRED.
2. METER DIMENSIONS MAY VARY. CONTRACTOR SHALL VERIFY METER DIMENSIONS AND VARY CLEARANCE DIMENSIONS TO CENTER METER ASSEMBLY IN UTILITY BOX WITH SPECIFIED CLEARANCES.
3. METER SUPPLIED BY MSWD.
4. VAULT SHALL BE 60"x 60" J&R PRODUCTS NO. 1289 OR APPROVED EQUAL.
5. VAULT LID TO BE "U.S.F." 4' x 5' TPD, ALUMINUM DIAMOND PLATE, SPRING ASSIST PARKWAY COVER WITH S.S. STANDARD HARDWARE & OVERSIZED RECESSED PADLOCK HASP. OR APPROVED EQUAL.
6. ALL MATERIALS PER MSWD APPROVED MATERIAL LIST.
7. DEPTH OF METER SHALL BE 5 FT. MAX. FROM VAULT LID TO TOP OF METER.



### MSWD VAULT DETAIL 3" WATER METER INSTALLATION NOTES AND MATERIAL LIST

Approved:

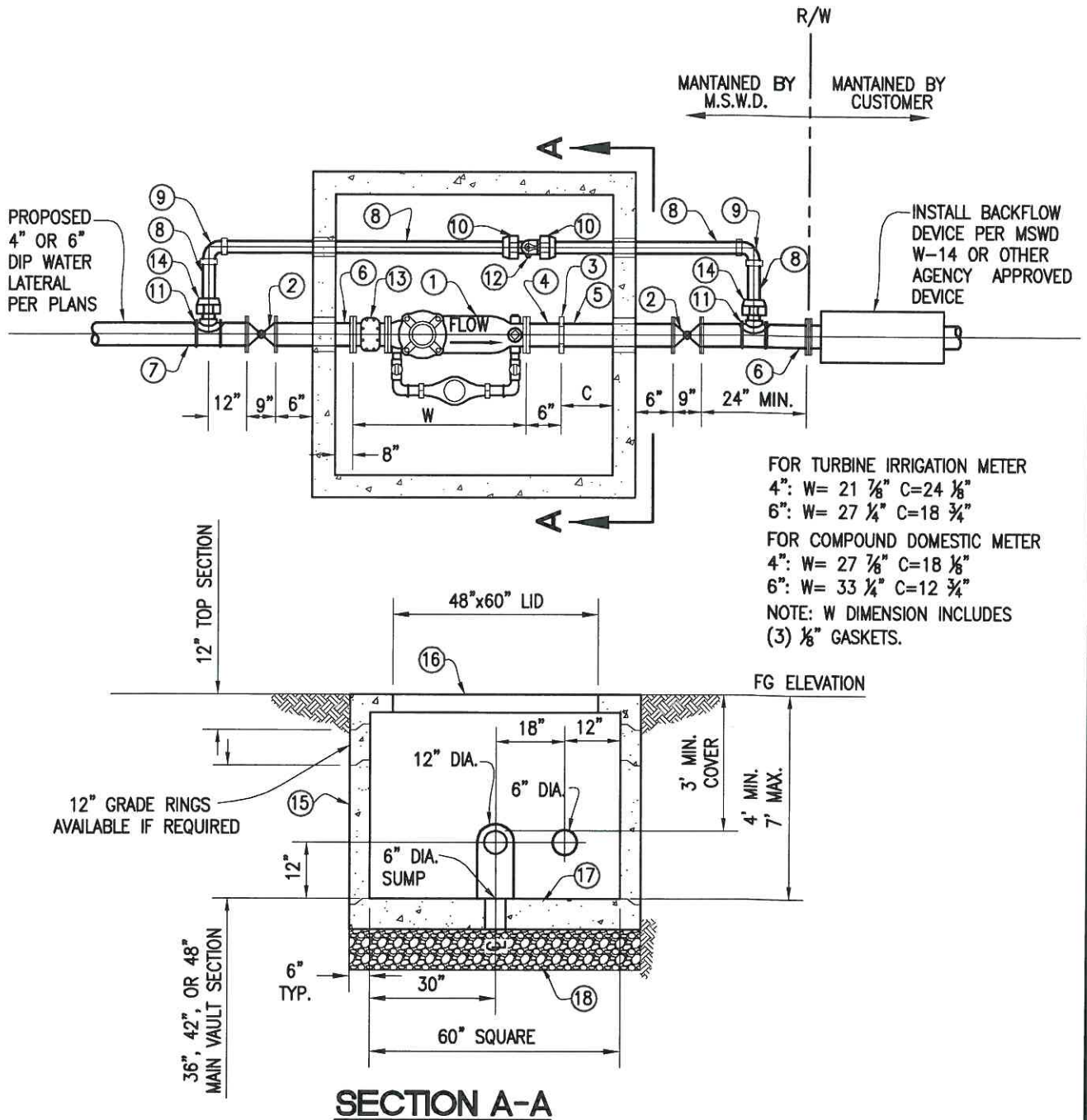
Arden Wallum  
General Manager

Drawn: Heitec Inc. Date: 6/22/11

DRAWING No.

W-16A





SEE W-17A FOR NOTES AND MATERIAL LIST



MSWD VAULT DETAIL  
 4" OR 6" WATER METER  
 INSTALLATION

Approved:

Arden Wallum  
 General Manager

Drawn: Heitec Inc. Date: 6/22/11

DRAWING No.

W-17



MATERIAL LIST			
ITEM	QTY.	DESCRIPTION	MATL. LIST #
①	1	METER PER PLANS	
②	2	4" OR 6" RESILIENT SEAT FLANGED GATE VALVE	
③	1	4" OR 6" VICTAULIC COUPLING	
④	1	4" OR 6" x 6" LONG FLG. X VICTAULIC DIP SPOOL	
⑤	1	4" OR 6" DIP FLG X VICTAULIC SPOOL (LENGTH VARIES)	
⑥	2	4" OR 6" FLANGED DIP SPOOL (LENGTH VARIES)	
⑦	LF	4" OR 6" DIP PIPE (FLANGED END)	
⑧	15±	2" COPPER TUBING TYPE K	
⑨	2	2" x 90° BRONZE CTS COMPRESSION	
⑩	2	2" BRONZE CTS COMPRESSION x 2" MALE IRON PIPE THREAD (MIPT) ADAPT.	
⑪	2	4" x 2" BRONZE DOUBLE STRAP SERVICE SADDLE PER MSWD W-09	
⑫	1	2" BRASS CURB BALL STOP - FIPTxFIPT	
⑬	1	WATER METER STRAINER	
⑭	2	2" MIPT x 2" CTS COMPRESSION BALL CORP. STOP	
⑮	1	UTILITY BOX/VAULT **	
⑯	1	TORSION SPRING 2-PC LID: PARKWAY OR TRAFFIC COVER (ALUMINUM). ROADWAY APPLIC. TO MEET AASHTO H-20 DIRECT TRAFFIC RATING (STEEL)	
⑰	1	PRECAST CONCRETE BASE W/8" SUMP ****	
⑱	36 CF	12" THICK 3/4" CRUSHED ROCK BASE	

### NOTES:

1. PROVIDE METER SUPPORT AS REQUIRED.
2. METER DIMENSIONS MAY VARY. CONTRACTOR SHALL VERIFY METER DIMENSIONS AND VARY CLEARANCE DIMENSIONS TO CENTER METER ASSEMBLY IN UTILITY BOX WITH SPECIFIED CLEARANCES.
3. METER REGISTERS TO READ IN CUBIC FEET.
4. VAULT SHALL BE 60"x 60" J&R PRODUCTS NO. 1289 OR APPROVED EQUAL.
5. READ HOLES ARE TO BE POSITIONED OVER METER REGISTER AFTER METER IS INSTALLED.
6. VAULT LID TO BE "U.S.F." 4' x 5' TPD, ALUMINUM DIAMOND PLATE, SPRING ASSIST PARKWAY COVER WITH S.S. STANDARD HARDWARE & OVERSIZED RECESSED PADLOCK HASP. OR APPROVED EQUAL.
7. ALL MATERIALS PER MSWD APPROVED MATERIAL LIST.
8. METER TYPE SHALL BE APPROVED BY MSWD.
9. DEPTH OF METER SHALL BE 5 FT. MAX. FROM VAULT LID TO TOP OF METER.
10. PROVIDE A MINIMUM OF 4" CLEARANCE BETWEEN PIPE AND KNOCK OUT HOLE WITH A MINIMUM OF 6" CLEARANCE ABOVE THE VAULT FLOOR.



MSWD VAULT DETAIL  
4" OR 6" WATER METER  
INSTALLATION NOTES AND  
MATERIAL LIST

Approved: 

Arden Wallum  
General Manager

Drawn: Heitec Inc. Date: 6/22/11

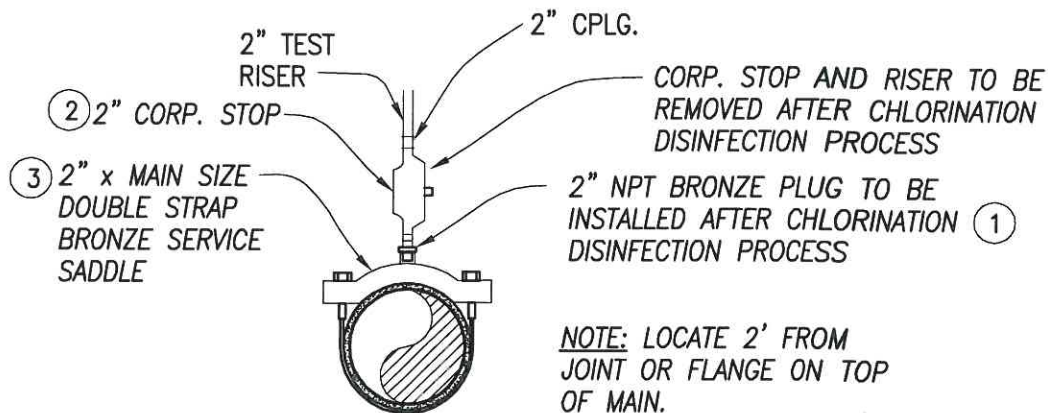
DRAWING No.

W-17A









**ELEVATION VIEW**

ITEM	No. Req'd.	DESCRIPTION	Matl. List#
1	1	2" M.N.P.T. BRONZE PLUG	
2	1	2" BALL CORP STOP, M.N.P.T. INLET AND OUTLET	C-02
3	1	2" x MAIN SIZE DOUBLE STRAP BRONZE SERVICE SADDLE	L-01

**NOTES:**

1. PIPE THREADS SHALL BE CLEAN AND SHARP AND SEALED WITH AN APPROVED JOINT COMPOUND.
2. RISER SHALL INCLUDE SHUT-OFF VALVE AND FITTINGS AS NEEDED.
3. ASSEMBLY SHALL BE PROTECTED WITHIN PVC RISER CAPPED WITH A TRAFFIC COVER AS APPROVED BY THE MSWD INSPECTOR WHEN LOCATED WITHIN A STREET OR OTHER AREA SUBJECT TO TRAFFIC.



TEMPORARY CHLORINATION POINT  
(T.C.P.)

Approved:

Arden Wallum  
General Manager

Drawn: Heitec Inc. Date: 5/3/12

DRAWING No.

W-19